AMERICAN Massachusetts FEB 4- 1921 Agricultural College FRIITGROVER

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Record

FEBRUARY 1921

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Edited by Samuel Adams

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BULLETIN No. 184 of the Massachusetts Experiment Station, on page 52, shows that Scalecide (1 to 15) was 100% efficient in killing aphis while hatching and with only "slight injury" to the foliage when "three-quarters inch open."

On the other hand, lime-sulfur (1 to 8) killed less than 10% of the aphis and caused "considerable injury"; and lime-sulfur (1 to 8) with nicotine sulphate (1 to 800) added, although effective, also caused "considerable injury," the same as when lime-sulfur was used alone.

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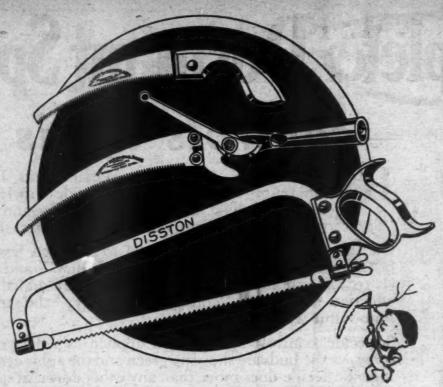
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bbage, Constant (Oyster Inc.)

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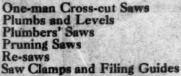
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AMERICAN FRUIT GROWER

The National Fruit Journal of America

AMERICAN FRUIT GROWER COMPANY, Inc., State-Lake Bldg., Chicago, Ill.

Entered as second-class matter Oct. 17, 1917, as the Post Office at Chicago, Ill., under the Act of March 3, 1879

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FEBRUARY, 1921

Spraying Lessens Worm Injuries Community

By M. L. Dean, Washington

E ARE told by the investiga-tors that the loss to the 15 prominent food products in the United States for 1919 from the wages of insects and diseases was arly one and a half billions of dolnearly one and a half billions of dollars. Enough wheat was destroyed by wheat rust to have fed the people of the city of Chicago for six years. Apple scab took 4,000,000 bushels of apples, and made them worthless or of little value to the fruit grower. The colling moth took an equal, if not a greater, toll from the apple crop of the country. Similar statements could be made of the other economic crops. But figures mean little. Yet it only takes a moment's reflection to crops. But figures mean little. Yet it only takes a moment's reflection to analyze the situation, and see that unless more systematic, concerted effort is made in pest control work, a few years will find the people of this country looking to outside fields for their food supply.

There are states today in which

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neir food supply.

There are states today in which heir fruit interests are in jeopardy ecause of the prevalence of the coding moth. Very few fruit sections of the United States are today free of this pest. It has gradually spread from one state to another with the evelopment of orchard interests until day there is not a state in the Union today there is not a state in the Union but what the fruit grower is obliged to fight the codling moth. British Columbia, by more drastic methods of control, is the only section of the American continent where the codling moth does not exist.

United Effort Needed

In the state of Washington in 1918 In the state of Washington in 1918 the loss to the fruit growers, from the codling moth alone, was in the neighborhood of four millions of dollars. This fact emphasized the importance of better control measures. The ravages of the pest became so severe in some cases that growers threatened to abandon their orchards. In some that they they are fruit districts. ites today there are fruit districts

to abandon their orchards. In some states today there are fruit districts where the growers are experiencing such heavy losses from the attacks of this pest that there is no profit in the industry. Hence a united effort for better pest control is of paramount importance.

During the season of 1918 one grower in the Wenatchee valley appealed to the horticultural division of the Washington State Department of Agriculture for relief in connection with the control of the codling moth in his orchard. The previous year he had harvested less than 40 per cent clean fruit, and in 1918 was about to abandon the operations unless he could get relief.

as spraying program was lined for him, and indinal attention given to his wities, being sure that sprayed at the right e, used the proper maals and applied them he the proper degree of coughness. The result that he harvested a to crop of fruit in the showing a very small

tion. This demonstration emphasized the importance of careful attention in all spray operations.

all spray operations. In this community a public meeting was held and the matter was freely discussed, after which a community unit was organized for the 1919 activities. This unit embraced about 1,400 acres of orchard. There were not sufficient state funds available to employ an inspector to give his entire time to this particular section, consequently the growers voluntarily assessed themselves at the rate of \$1 an acre to raise a supplementary fund for the maintenance of the inspection services.

man was secured who followed the instructions of the department in the minutest detail. He made a care-ful survey of the entire territory, as-certaining the number of acres, also the number of trees, and determined whether each grower had sufficient equipment to properly spray his or-chard in the period of time that was necessary as it should be sprayed, as well as knowing that the right ma-terial was available for spraying

operations.

In the event that the growers were not properly equipped, he made it possible for them to secure service. The details as to when the spraying should be done were arranged, and each grower was advised of the day when the first spray should be applied.

Thoroughly Sprayed

The inspector made a careful survey of the territory, ascertaining that each grower was spraying his orchard each grower was spraying his orchard at the proper time and doing the work at the proper time and doing the work thoroughly. In some instances he was obliged to recall owners as many as three times to re-spray the trees be-fore they were what he called "thor-oughly sprayed." This service was rendered every grower in the com-munity unit, until the first or calyx

spray was applied. Dates were carefully figured for the later or cover aprays, and the same attention was given during those operations. In some instances in the worst infested orchards it was necessary to apply four applications, but usually three were sufficient. In some orchards in 1917 the worm infestation was so seri-ous that none of the apples were harvested, the percentages running from 50 to as high as 100 per cent. The entire area averaged over 60 per cent worm infestation. This year, 1920, the entire 1,400 acres showed less than five per cent of worms.

five per cent of worms.

The theory under which the operations were conducted was that codling moth eradication could be made possible if a concerted effort of proper spray operations were followed by every grower for a few years. The theory of codling moth control was to completely exterminate the first brood and then there could be no second brood, hence great stress was laid upon the early spraying, namely, the brood, hence great stress was laid upon the early spraying, namely, the calyx spray. After every effort had been made to properly apply the calyx sprays, a thorough thinning of the fruit was resorted to. The idea being to clean up and to destroy all of the worms which escaped the calyx spray.

Equipment and Material

The time of the calyx spray was determined very largely by the conditions of the center blossom of the cluster. The center blossom is the first one to open, and its calyx is the first to close. The calyx spray was applied after the blossoms were all out, but before any of the calyxes had closed. In orchards where there was a mixture of varieties which had a long blooming period, or where there were several different blooming periods, it was impossible to get all of the blossoms at any one time. In such cases we were obliged to make more than

one calyx spray. In seriously infested orchards this is advisable and a very economical practice.

The equipment for the calyx spray is very important. We received the best results from using the eight-foot rods, equipped with an angle, a "Y," and two clipper or Bordeaux type nozzles. We, in so far as was possible, insisted upon the use of poles for this application. High pressure is necessary and at least 250 to 300 pounds should be obtained in order that material may be driven thoroughly into the blossom and in sufficient quantities to fill the calyx cups and to thoroughly drench the trees. To do this it is necessary that the spray outfit be driven on each side of the rows so that easy access can be had to all sides of the trees. The best gasoline power outfit in the market is none too good. Large capacity and ample power is essential. Strong hose and tight joints should be used.

The materials used were the standard brands of arsenate of lead and four

The materials used were the standard brands of arsenate of lead and four pounds of dry powder, or eight pounds of the paste, was used to each 260 gallons of water. In some instances a weak solution of lime-sulphur was added to the arsenical spray, in order that the powdery mildew could be combated at the same time as the codling moth, but generally speaking each solution was used separate, believing that better results could be obtained. We have found the casine spreader to be very beneficial in cover sprays. This is made by mixing one pound of casine with two ounces of caustic soda in one gallon of water. The mixture is boiled until the casine is dissolved, then one quart is added to each 200 gallons of the spray solution. The materials used were the standard

Thoroughness measures success. In the application of the spray it is necessary to force the liquid into the calyx cups of each blossom. To do this, careful, thorough, and painstaking work must be done by the nozzlemen, and at all times sufficient material must be used.

d. The tower on the spray The tower on the spray tanks for trees 10 years of age or older, is very necessary in order that one nozzleman may be elevated above the tank sufficiently that he can cover the top of the trees with one nozzle, throwing a downward spray into the calyx cups of the blossoms. The man on the ground covers the lower parts of the trees. Usually in badly infested orchards, the greater majority of the wormy apples are in the tops of the trees, because it is impossible to properly spray the tops of trees from the ground. This is especially true with the calyx spray, but it is equally applicable to all sprays during the entire season.

First Cover Spray—Time

First Cover Spray-Time

The time for application of the first cover spray was determined by the use of breeding cages, and by (Continued on page 21)



The Tractor is Replacing Horses in Many Orchards for Pulling the Sprayer

The Department's Service to Fruit Growers

By E. T. Meredith, Secretary of Agriculture

SECRETARY MEREDITH'S MESSAGE TO FRUIT

GROWERS I have said on a number of occasions that the department of agriculture pays a thousand per cent returns to the citizens of the country on the money they

invest in it-the appropriations

which congress grants it. I be-lieve that is true. But unless

the people of the country take and use the services which the department is offering, the full benefits of its work, the full re-

turns on their investment, will not be realized. I hope you— the fruit growers of America—

will assure yourselves that you are making the largest possible use of the department's service.

I hope you will bring your problems to the department; that you will use it and support it and

iceable to fruit growers not only but to all the people of the country.—E. T. Meredith.

e it better and more serv-

THE STORY OF THE navel orange is one of the most interesting of the many romances of plant introduction. In the early seventies—nearly 50 years ago—the United States Department of Agriculture brought from Bahia. ment of Agriculture brought from Bahia, Brazil, some trees of an orange variety which later were named the Washington Navel. In 1873, two trees of this variety, propagated in the department greenhouses at Washington, were sent to California. These may be regarded as substantially the foundation of the citrus industry of that state, which, during the past year, produced about 47,000 carloads of fruit—nearly 38,000 cars of oranges, and approximately 8,700 carloads of lemons. The estimated value of this crop was \$81,200,000. For many years the citrus industry of California consisted very largely of the Washington Navel orange. Thus a new industry was built up on a service rendered by the United States Department of Agriculture.

Dates Back About 35 Years

The definitely organized fruit work of the department goes back about 35 years and dates from the organization of the division of pomology in 1886. Congress having included in the agricultural act for the fiscal year 1886-87 an item of \$2,000 for the salary of a pomologist. With this small sum, it obviously was impossible to undertake any very extensive activities at that time. For some years much of the effort put forth by the division of pomology was in the nature of a survey, particularly regarding fruit varieties and their range of adaptability. This general type of work has been continued throughout the period since the pomological work was first organized. It is impossible to estimate the influence of this activity, so far as the fruit grower is concerned, in selecting for planting fruit varieties of merit well adapted to the begions where they were to be grown and well suited to the purposes for which they were desired.

During the earlier years of the pomological work, much attention was given also to the distribution of scions of promising varieties, for the purpose of testing them under different conditions. In this way the range of adaptability of different varieties was determined. Many of the scions were of fruits grown in foreign countries. For instance, at the request of the pomologist in 1894, and again in 1895, the them United States Minister to China sent scions of oriental persimmons to the department; and while the first efforts thus to introduce Japanese and other oriental persimmons into this country were not entirely successful, later attempts resulted in the introduction and dissemination of a large number of important varieties.

As the citrus industry of California developed, shippers began to suffer great losses because of the decay of fruit while in transit to the department of agriculture undertook, in the latter year, a survey of conditions to ascertain, if possible, the real cause. It is unnecessary to recount in detail the course of the picker, by the dinger nails of the picker,

packing house. The investigations were directed toward the handling of the fruit at every point with the view of developing methods that would prevent breaking the skin even to the slightest extent.

Effect Radical Changes

Methods of picking and handling the fruit in the orchards were radically changed, and the packing houses were almost completely remodelled with the view of eliminating injury to the fruit after delivering from the groves. As a result, the loss

result, the loss from decay during shipment to east-ern markets was almost completely eliminated. This eliminated. This accomplishment alone has meant the saving of hundreds of thousands of dollars to the citrus industry of California and to distributors of the fruits in the eastfruits in the east-

ern markets.
Thes: investigations were along fundamental lines, and while the orange crop of California happened to be of immediate concern, the real object of the studies and the reobject of the studies and the re-sults of them were of far wider ex-tent and impor-tance. The aim was a comprehensive and funda-mental study of fruit handling and transportation.

reprints the whole history of the fruit industry up to this time has so emphasized the importance of careful handling in the durability of perishable products.

As the work progressed, similar activities were carried on with oranges in Florida, with peaches in some of the important peach-producing sections of the country, and with raspberries and other small fruits in their respective regions.

Studies were made of cold storage requirements of apples and other fruits. It was a common experience fifteen years ago to find that, under standard storage conditions, apples grown in one region behaved very differently from those of the same variety grown elsewhere but stored in the same storage house or under similar storage conditions; differences, too, appeared in fruit from the

same orchard. Not infrequently there were heavy losses through deterioration of apples in cold storage and the blame was placed on the management of the cold storage warehouse. There seemed to be no explanation of the problem other than the mismanagement of the cold room in which the apples were placed, even though there was no actual evidence of any fault in the management. A comprehensive investigation revealed the fact that apples stored immediately upon being picked would keep satisfactorily, while some of the same variety, from orchard, handled the same in every way the same, except that they were left in the orchard or perhaps in a shed or barn for a few days before they were stored, would deteriorate in a comparatively short time after

deteriorate in a comparatively short time after being placed in cold storage. This in vestigation, which was ex-tended to pears, emphasized the fundamental importance of get-ting fruit into cold

ting fruit into cold storage in the short-est possible time after it is picked. The cooling of highly perishable fruit products (pre-cooling, as it is usu-ally termed), before

support it and and more servite growers not the people of the Meredith.

This activity consists in the cooling of the fruit by proper refrigeration at the desired shipping temperature before it is placed in the refrigerator car, or, in some instances, after it is loaded but before the car leaves the shipping station. Through the ordinary cooling process of placing the ice in the bunkers of a refrigerator car, it is a long time before the fruit in the middle of the car, as well as that in the center of the packages, reaches a temperature sufficiently low to retard the development of organisms which cause decay, or even to retard the normal softening of the fruit after picking. It might happen, therefore, that a carload of some highly perishable product would be half the distance from the shipping point to its destination before a large part of the

fruit would be affected by the cool temperature of the car, even though the temperature, as indicated by a thermometer, might be in a satisfactory

Another line of works of far-reaching influence and importance is the improvement of fruits through bud selection. About 10 years ago one of the workers of the department of agriculture, while engaged in another line of investigation, became impressed with the fact that surprisingly large proportion of the tree in the average citrus grove was unproductive; or, if productive, the fruit was of such a character as to be unmarket able. He became convinced, in a general way, that the former were habitually unproductive, and that the trees which produced fruit of an undesirable and unmarketable type always produced that character of fruit, while the trees which bore high grade fruit abundantly were regularly productive. These general facts were so evident to him, and seemed to have such significance in principle, that he was assigned to a study of the problem.

In order to secure accurate information, he selected typical blocks in some of the citrus groves containing Washinton Navel and Valencia oranges, Managrapefruit, Eureka and Lisbon lemon, and some of the less important varieties of citrus fruits, and individual treperformance records continuing over a series of years were gathered. The amount of fruit produced by each tree and the quantity of the different grades from each were carefully recorded. These records confirmed, in a decisive way, the first impressions that the investigator had concerning the consistency of bearing in trees of different types. The next step in this study was to determine whether these tree characterities would be perpetuated in tree propagated from them.

It would require too much space to record here all the details of the investigation but it is of interest to note that with a remarkable degree of consistency, progeny trees propagated from a high-yielding tree is itself, in turn, a large produce, while one propagated from a tree that in practically barren perpetuates the characteristics of the parent. For instance, a tree propagated from a tree that in practically barren perpetuates

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a subsidiary organization of California Fruit Growers' change, organized a bud select department to supply buds fi selected superior high-yield parent trees for the use of grow in top-working their unproduct trees and also for the use nurserymen in propagating cities. Since this work was begthe nurseries propagating cities. trees. Since this work was be the nurseries propagating of trees in California have rea-the point of using practicall other buds in the propagated their citrus stock; and the den for trees so propagated has be so general that a nurseryma practically compelled to fur nursery stock propagated trees of known parentage. Sthe bud selection department established in 1917, approxima 1,000,000 buds have been sup to growers and nurserymen the demand for them is constance

ncreasing.

Those concerned with the de uous fruit interests of Califorare rapidly turning their attento the importance of bud select as a direct result of this withroughout the country, a ralively interest in this matter will undoubtedly result in great (Continued on page 34)



Self-Boiled Lime-Sulphur for Brown Rot Control Is One of the Valuable Services Rendered

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Co-operation in the Pacific Northwest

By C. I. Lewis, Associate Editor

This is the third of a series of six articles by Mr. Lewis, de-scribing the development and function of some of the larger

co-operative associations on the Pacific coast. In this article, the

evolution of the marketing agencies in the Pacific northwest is described. While these or-

ganizations still are undergoing development, they have already made great progress. Notable

made great progress. Notable in this respect is the standard-ization of grades and packs, and the enlargement of their mar-kets until a crop of 35,000 acres can be marketed without creat-

ing a glut.

IN OUR past two papers we have dealt entirely with the California situation. Our next two papers will deal primarily with the history and development of co-operation in the Pacific northwest. These papers should prove especially interesting to those who are contemplating for the first time, launching into the co-operative field. History has repeated itself in the Pacific northwest. We have gone through many of the trials and tribulations which California passed imough years ago. A close study of our experiences, and careful observations of the lessons it is possible to learn therefrom, should be greatly beneficial to all those sections of our country that are contemplating cooperative marketing, for after all, the indamentals of co-operative marketing are always the same. The local applications may be somewhat different.

ferent.

In studying co-operative marketing in the Pacific northwest, we will divide our study into four different-periods. First, that extending from 1900 to 1912, known as the planting and developing period; second, that extending from 1912 to 1915, known as the sump period, or period of depression; the third, extending from 1915 to 1920 known as the period of reconstruction; and fourth, the future, or a study of signs of the times. We will deal now with the first period.

Planting and Developing

Planting and Developing
While the Pacific northwest had passed through several developments of heavy planting of both apples and prunes, prior to 1900, the real basis of our horticultural prosperity was really etablished between the years 1900 and 1912, and in fact, the greater part of the acreage was set out between the years 1905 to 1912. During this period there was a tremendous influx of eastern peoples to our Northwest country. These people were lured here partly by scenery and climate, but to a large extent, came because of the wonderful stories they had heard concerning the possible profits in apple culture. They came to the land of the big red apple, to the land of opportunity.

a spile culture. They came to the mid of the big red apple, to the land of opportunity.

We have no reliable figures concerning the acreage of apples which was stablished during that epoch, but ome people placed it as high as half a million acres. Perhaps half that mount would be more conservative and if we eliminate the undesirable and, the acreage would be a great deal less. During this period fruit in such sections as Hood River for example, was often bought by tender. That is, competitive bidders would often come out as early as July and August and camp, put their sealed bids in envelopes which were opened in a local bank, the highest bidder senseally receiving the fruit.

Few felt at that time, that there was any danger of a collapse in our apple business. If anyone cautioned a district on its apple development, bey were always told that we produced varieties which were unexcelled a size, color, freedom from blemish, and quality, that no other section of country could produce apples comparable to the Pacific northwest. That we would never be able to meet the mand for this class of fruit.

During this period, several local aganizations developed, such as the Hood River Apple Growers' Association, and the Mosier Association, and the Mosier Association in Dregon, and such organizations as the latima Fruit Growers' Association, hown now as the "Big Y," and the Horticultural Union of Yakima. There were many others, but these are vipical.

There was also another organization long hown as the Northwest Fruit

There was also another organiza-on known as the Northwest Fruit schange which started to function 1912 and which enlisted the support a large number of fruit growers. hills the Northwest Fruit Exchange

has never been a co-operative body, many of the groups of members which later formed the Skookum Packers, are co-operative as far as the physical handling is concerned, and despite some of the criticism concerning this organization which we will speak of later, they have been a factor which has always stood for better packing, for advertising, and wider distribution.

Owes Debt of Gratitude

It is well, however, to say at this time, that the co-operative fruit bodies of the Pacific northwest have

been its one bul-wark. Had it not wark. Had it not been for the pres-ence of these local co-operative bodies during the last 20 years, it is doubtful if the apple industry in the northwest could have been saved. And it never would have been developed to the high degree which is true to-day. While these day. While these associations may not have obtained at times, much more money for their members than outside

than outside growers received, we must never forget that had it not been for the presence of these local co-operative bodies, no one would have received the price which the associations really established. The northwest owes an everlasting debt of gratitude to the stand which these co-operative bodies

took.

One mistake, however, was made in the early days, and that was that the local co-operative body did not early recognize those activities which it could legitimately and easily perform, or those which it would be impossible for it to perform. A lack of this knowledge has proved fatal to many a local co-operative body. The functions of an organization has its limits. This has been demonstrated to be true in California for the last 30 years, and our experience in the last 20 years in the northwest has demonstrated the same truth.

same truth.

There are many things which a local association can do. It can purchase materials cheaper for its members than can the individual; it can standardize the local pack; it can get better recognition from railroads than any individual can hope to obtain; it can reduce, to a certain degree, the cost of marketing; it can build desirable cold storage and suitable packing equipment. In fact the co-operative bodies in the northwest own today the best cold storage and packing facilities found in our country.

These bodies can encourage much

These bodies can encourage much better production. They can establish and handle, in a local way, by-products plants. They can constantly be a potent influence for good.

Limits of the Local

But there are some things which local co-operative bodies cannot do. They cannot meet the great problems confronting the industry, such as really obtaining national distribution. They cannot greatly reduce the cost of marketing. They can do very little to prevent a certain type of retail graft; very little to really establish a system of selling on an f. o. b. basis. They cannot really develop the byproducts business in a well balanced way, which might be necessary in certain sections of the country. Rarely can they obtain needed legislation, or

Beginning as early as 1910 there were some rumblings and dark clouds on the horizon. Already a change was coming over the apple industry in the northwest. Many felt, however, that this was very temporary, and it was not until about 1912 when the real collapse came. The northwest sudcollapse came. The northwest sud-denly found itself with more apples to sell than the markets they had pre-viously developed

could consume.
Immediately

the cry went up "o ver production." Oh, how that word has been played up to cover a multitude of sins in every fruit industry in Americal It was not overproduction, as we can tion, as we can see later, but a lack of intelligent marketing and distribution which

distribution which was responsible for the seemingly glutted market. The growers at once became panicky. A cut-throat policy was established. Any one district would undersell any other district in the northwest if they knew the competitor's price. The buyers played the growers and local buyers to a "fare-ye-well," and often splendid apples which cost over \$1 to grow were bought as low as 65 cents to 75 cents a box.

cents to 75 cents a box.

Needless to say, many people were ruined. Some actually abandoned their orchards, others committed suicide, and had the banks and those holding mortgages wished to foreclose, 75 per cent of the ranches would have changed hands. While all bankers at this stage of the game did not realize the real problems confronting the fruit industry. a few business men. especially industry, a few business men, especially those at Spokane, through the medium of the Spokane Chamber of Commerce, did realize some of the problems confronting the fruit growers and started steps to try and correct them.

steps to try and correct them.

During this period there were a great many handlers of apples in the northwest, in fact five or six hundred. There were two very large holders, the first being the Northwest Fruit Exchange. This body made a very serious attempt to enlist the support of a majority of the fruit growers of the northwest, but there was a feeling on the part of many of the growers that eastern interests controlled a large share of the stock in the Northwest Fruit Exchange, and might ultimately control the entire marketing machinery.

Again, there was a feeling that no

mately control the entire marketing machinery.

Again, there was a feeling that no organization representing growers, which was giving service in marketing, should ever buy fruit on its own account in any way, shape or fashion. The exchange made a good start in Oregon, but finally largely lost out in that state, other than representing a few large orchards, but did become very firmly established in Washington, especially in the Wenatchee district where it is one of the biggest handlers in the northwest today.

The growers held numerous meetings, and decided to form a co-operative body of their own, following somewhat the general lines of the California Fruit Growers' Exchange, except that this body sold directly rather than serving as a mere clearing house. The idea was to form large locals in the various districts. Ten

large districts were formed, Yakima, Hood River, Wenatchee, Idaho-Oregon, Walla Walla, Spokane, Central Idaho-Washington, Montana, and Western

Oregon.

Some of the best organizers and keenest fruit handlers of the northwest allied themselves with this organization. In the year 1913 they shipped out practically 4,000 ears of fruit; and in 1914, over 5,000 cars. From that time on, however, the organization became weaker and finally collapsed. There were probably several reasons for the collapse. The main reason being the old selfish feeling between the various districts, each dereason being the old selfish feeling between the various districts, each demanding the maintenance of very expensive overheads. There was a lack of confidence on the part of some of the leaders and inadequate support from the beginning by the growers. The mistake was made of never giving the individual members of the organization sufficient chance to express their opinion. Coupled with this it must be remembered that the distributors were expected to do a piece of work which could not be accomplished in a year or two, and which could not be accomplished with a limited tonnage.

not be accomplished with a limited tonnage.

Matters went from bad to worse. Frequent meetings were called during 1912, 1913, 1914 and 1915. At one time, a council was formed with representatives from each district in the northwest. They in turn formed an administrative council of three, of which Senator Paulhamus of the Puyallup Valley was chairman, when a hue and cry went up from some sections of the northwest that while Paulhamus was a cannery man and a berry man, he knew nothing about the apple game. Again the old jealousy and the unwillingness to rally to the support of the northwest leaders asserted itself and the council collapsed.

The council, before ceasing to func-tion, however, made desperate efforts to get the Northwest Fruit Exchange, the North Pacific Distributors, and the North Pacific Distributors, and other large handlers, working together to form some sort of a clearing house and to establish mutual understandings which would prevent the throat cutting which was ruining the apple industry. Finally in the fall of 1915, the Bureau of Markets sent out three men into the northwest.

The Fruit Growers' Agency
After interviewing the various leaders, these men requested the privilege of presenting a plan to the leading growers of the northwest. A meeting was called at Spokane, and what was known as the Fruit Growers' Agency, was incorporated in 1915. What this agency was and what it has accomplished is of considerable interest. The first section of the membership clause is very interesting, namely that the membership of this corporation shall be composed exclusively of individuals, firms or corporations which are growers, growers' organizations, and growers, growers' organizations, and growers' selling agents, who handle an average of 100 or more cars of fruit products per year, and who actually live in the northwest.

There were two classes of members, the active members, who carried the right to hold office and vote, and passive members who had no right to vote. The active members were those who handled at least 100 acres of fruit a year. The passive members were those who produced not less than one car a year, and any grower whose average production was not less than one car a year, and any grower whose average production was not less than one car a year, and any grower whose average production was not less than one car a year, and any grower organization which handled an average of not less than 100 cars of fruit a year, might become active members.

Any grower regardless of his annual production might become a passive member. The result of this membership clause was that it immediately threw out of business hundled and the production of the production of the production of the second of the production of the second of

rees in the been too me trees of me this, in pply Comotion of the wees' End selection buds from gh-yield in of growen approductive, the use of the tring citras was begunting citras

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It Is Vital to the Concord Grape Industry

THERE are several very vital points in the grape industry that must be earnestly and positively considered and provided for if the Concord grape growers of America ever expect to reap the true values due them for the products they raise to sell. Those things can be summed up in the following brief items:

In this day and age the isolation of man, associations, or industry means economic ruin. Every industry of the land, even down to the boot-blacks, have organized themselves into locals and those locals into large central organizations or units, in order that the personal interests of its members might be the better cared for and the individual saved from the gross abuse his isolation and lack of protection permits and invites in this day of legalized business piracy. In other words, that the might of the host shall be massed in the protection of the one.

The Concord grape grower, and fruit growers in general, are sadly in need of a closer bond of fellowship as expressed in the local association, and those locals bound together in one great central unit or association. They need such binding together as no other vocation needs it. When Mother Nature says it is time to pick the crop, harvest we must, or lose it all, rain or shine, ready or unready, baskets or no baskets, markets or no markets, cars or no cars. Nature waits on no man, matter or thing.

Need Organization

Need Organization

Therefore, in order to be ready for the hour when the season opens, we growers need a most comprehensive and co-operatively organized arrangement, the best that it is possible for us to obtain. It should include every grower and every grower's local association in the nation to the end that we may conduct our business during those vital hours in such wise that we may reap the rewards we are justly entitled to as compensation for risking our all each year.

I am glad to say that there are many growers in the larger belts that have seen the necessity of organization

The Cencerd Grape Industry Has Large Possible for "came a runnin'," like any other batch of slaves, whining and fawning at his feet, begging for the crumbs of special favors he doled out to them, a power supreme, the czar of all he surveyed.

Wherever the locals were formed and vigorously conducted they put a stop to the gamblers' game. But wherever the local growers were not possessed with business intelligence action and did not join in sufficiently large numbers to control at least two-thirds or more of the crop, much trouble ensued with disorder and disorder and dissolution often following.

The Cencerd Grape Industry Has Large Possible for "came a runnin'," like any other batch of slaves, whining and fawning at his favors he doled out to them, a power supreme, the czar of all he surveyed.

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Wherever the locals growers were not possessed with business intelligence action and did not join in sufficiently large numbers to control at least two-thirds or more of the crop, much the crop and the surveyed.

The Concerd Grape Industry Has Large Powers are rounning."

By O. W. Johnson, Ohio

tion, and have created many local associations to protect themselves the better from the organized attack of conscienceless buyers, who, when no organization exists, pick their victims at will and fleece them at their pleasure. Those unprotected growers had to pick their crop; they had no available markets other than the speculative gamblers; they had no containers to load and ship their crop in if they had the markets, so the fleecing was easy. The gambling the association became its deadly commercial menace. By that act they dealt their own and the interests of their far-sighted neighbors a vicious body blow. To the door of those benighted beings must be laid the wrecks of 99 out of every 100 defunct growers associations.

Sowing Seeds of Discard

To those industrial sluggards came the gambling bloodhounds of comfleecing was easy. The gambling

in the United States (and Canada, they will join) into a national rangrowers' association. This organization seeks to do for the locals we the locals seek to do for the havidual grower and that is to the weight of this vast possibility power into the commercial arena the good of the individual association as well as the individual grower. In central organization is now functing as the National Grape Grown Association, with headquarter Unionville, Lake Co., O.

Thus the central organized be exists, so that feature is provided in But without the hearty in reserved co-operation and the control organization and the contro

But without the hearty reserved co-operation and physical, financial and post of all of the growers their associations, it will fall short of its vast possibilities good and will become just a potent and weak in direct to the strength of the supported to the strength of the capacity to sorb grapes is only pasthrough the active function of the central unit, The National Capacity Clubs Comments of the Clubs Comments of the Clubs Comments of the Clubs Comments of the central unit, The National Clubs Comments of the Clubs Comments of the central unit, The National Clubs Comments of the Clubs Comments of the Clubs Comments of the central unit, The National Clubs Comments of the Clubs Comme

How Gluts Occur

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Gluts and oversupply through the ignorance of conditions of abipment on mand rolling to a given man A shipper hears a report arising market at a given puthinking himself, perhaps sole possessor of this fucthinking that he can run da few cars in time to catch high tide, he rolls them. This is little act perhaps is being perfamat a dozen different points and is urally follows that the market promised so fair is knocked to pier. Under the plan of the national sociation this glut would have a occurred, because the capacy every market being known, and car moving at the command of central organization it naturally blows that only the normal would have reached that market a the prices would have held stad Many a season's best price proper have been completely demolished accidental, and in some cases discontinued on page 13)



The Concord Grape Industry Has Large Possibilities Through Organized Marketing Meth

silver" in the form of some little advantage of cash or flattery over and above that which the local association might have been able to give them if they had joined. Just the moment the sale was consummated, it was published far and wide among the organization's members that better terms could be had outside of the organization than in it. In this way they seek to sow discord, and to discredit the work and ability of the association to the end that it be disbanded and the growers become demoralized.

In August of 1919 a central grape growers' organization was formed at Cleveland, O., to unite every local association of Concord grape growers'

New Fruits From Bud Sports

By J. L. Collins, California Station

Horriculturists and fruit growers everywhere are anxious to know more about the nature and frequency of occurrence of bud sports in horticultural crops. This interest has been so strong in the Pacific Coast states that the California Fruit Growers' Exchange, an organization of about 10,000 members, established in 1917 a department of bud selection for the more scientific and systematic search for and study of bud sports as a means of improving varieties. Since that time other fruit growers' associations and nurserymen's associations have established similar departments under the supervision of trained plant breeders who conduct a search for valuable bud sports on a more extensive scale than is possible for the individual grower.

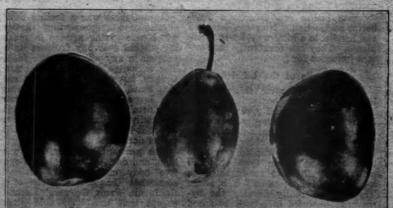
At this time the account of the discovery and propagation of a bud sport which has given rise to a new variety, destined to supplant the parent variety, will be of particular interest to those who seek more definite information concerning the utility of bud sports.

For a long time growers of the little French prune in California have desired a larger prune having the desirable characters of drying, productiveness and sugar content of the established variety. Mr. Leonard Coates, a California nurseryman, is ORTICULTURISTS and fruit

now placing on the market a new variety of French prune which fulfills the long sought for ideal.

Origin of the New Prune

The origin of this new and larger variety of the French prune, known as "Coates 1418 French prune," is definitely known to have come from a single limb occurring as a bud sport



Coates' 1418 French Pruns as Compared to Its Parent, Shown in the Center

value of this new variety in comparison with the parent stee Coates, who has always been a alert for any new variety, top-withe trees of alternate rows in acre orchard with the bud sport remaining rows were top-worked standard French prune from who bud sport originated, seedling trees being used for stocks, budded trees are now six year and have given crops that shot their relative value. The new coming from the sport has yields much greater than the variety. The fruits are shout the size and weight of the on French prune. They are born uniformly throughout the tree thus cause less danger of but the tree under a heavy crop shape of the new fruit is much uniform and requires less gradinging than the parent variety of Not only are the fruits large the leaves and the tree feelarger so that in the sixth ye alternate rows of trees of the variety could easily be disting from a distance.

Dried Fruit Larger

The dried fruits of the regrage about 25 to 80 to 3 compared with the average (Continued on page 3

With Our Editors

A Huge Enterprise

N ORGANIZATION capitalized at a million dollars has just been formed in New York state for the purpose of ying co-operatively for its members those modities needed in large quantities for production of their farm crops. It does t propose to deal in those articles that are entially the stock in trade of the local il merchants. Instead it will deal in the materials essential to the production of finished products of the farm.

There is no good reason why farmers ald not buy at wholesale figures those nodities needed in large quantities for ng stock, maintaining soil fertility or aring crops for market. To buy such odities co-operatively in order to sethe benefit of wholesale prices is good But there is a fine distinction en co-operative buying which is disnetly a constructive factor in the welfare f a community, and co-operative buying that is destructive to the established retail It is easy for a co-operative organizam to overstep the indefinite boundary bethe two, and in that way become welved in serious difficulties.

Remove the Amendments

HE Capper-Volstead co-operative mar-keting bill, which was passed by the senate late in December, was intended exempt co-operative marketing associations from the penalties of the Sherman di-trust law. In its original form this was given the specific endorsement of my great farm organizations. It was be-red that its passage would not only stimu-the formation of co-operative associa-ms, but would make it possible for these ciations to serve their membership more

tually.

However, before the bill got through the mate, certain amendments were tacked on, hich appear to have completely nullified good that might have come from the both to the producers of farm products and to those who buy them. Instead of bearketing of his crops, and permit him to argain collectively with the great organiza-ions to whom farm produce is sold, the law wis useless. In referring to the passage the amended bill by the senate, Mr. J. R. oward, president of the American Farm reau Federation, said: "The first amendment to which we object puts the regulatory in the over co-operative associations in the federal trade commission than the department of agriculture. ld be better for all concerned to have distribution of food supplies under the ervision of the department of agricul-

The second amendment virtually nullifies Capper-Volstead bill by putting back or the Sherman act the whole co-operalovement. This amendment must be nated if farmers are to benefit by the slation and thereby regain their will to duce. The National Board of Farm Orizations has requested that the objectable amendments be removed in the mittee before the final passage of the

view of the interest that exists in co-rative marketing, and the need of suit-legislation that will permit co-operative matrices to function to best advantage,

vigorous protests should be filed immediately with the judiciary committee of congress against the acceptance of the bill in its amended form. Many members of congress recognize the high importance of agriculture. All of them undoubtedly know their three meals a day would stop if farmers laid down on their job. But through the powerful influences brought to bear by big commercial interests the rights of farmers are forced into the background. The committee should cancel the amendments to the Capper-Volstead bill, and make it a law in the form in which it was endorsed by farmers. If you or your farm association has not yet protested against the amended form of the bill, do so at once.

Do You Co-Operate?

ARKETING is the most important of all agricultural problems of the present time. It is easy enough to produce crops, but if they cannot be sold at a profit, what is the use of producing them? But how to sell at a profit—that is where the rub comes. For the individual producer, far removed from the market, the problem gains in seriousness as the perishability and size of his crop, and the distance to market, increases. The series of articles by Mr. C. I. Lewis on the activities of the western cooperative association, now appearing in American Fruit Grower, point out how western fruit growers have solved some of the most grievous of their marketing problems through co-operation. These organizations have lifted the production of many fruits from total loss to reasonable profit, and created substantial, thrifty, populous cities from collections of vacant buildings.

What has been done in the west can be done in the east or south. What has been accomplished by fruit growers is possible for other farmers, for there is no secret to co-operation, and the blue sky is the limit of its possibilities. If your neighborhood is not organized for co-operative marketing,

why not? See your county agent.

Sprayers Make the Profit

UCCESS in spraying is not alone a matter of the time the applications are made and the material that is used, but also the thoroughness with which the spraying is done. Thoroughness is one corner of the triangle forming success in spraying. Statistics are not available as to the amount of spraying that is not thoroughly done, nor for that which is perfectly done. But there have been so many demonstrations conducted in all parts of the country in which the spraying was done with a high degree of perfection, with correspondingly good results, that it is safe to conclude that something went wrong when losses are suffered from insects and diseases in sprayed or-

One of the essentials in thorough spraying is adequate equipment. It is impossible to thoroughly spray a large acreage with one small outfit. There is some one application on all fruits which must be made within a very limited period. Too frequently the loss that is suffered from the inability to get the orchard or grove sprayed within that period, because of a breakdown in the machine, bad weather, shortage of labor, or other causes, amounts to a great deal more than the cost of adequate sprayer capacity.

It is much more profitable for the commercial fruit grower to have too much sprayer capacity than too little. It is not possible for all spraying outfits to thoroughly cover the same area. Some outfits will deliver as little as three gallons a minute, while some others will deliver ten times as much. Sprayer equipment should be measured on the ability to cover the trees within the minimum of time, rather than the actual number of dollars tied up in the machine. At present prices a fairly large power sprayer costs about six hundred dollars. How many bushels of high grade fruit would be needed to pay the interest and depreciation charges on such an outfit? It would be very few. But look at the cull pile in the average orchard, and the dropped fruit that littered the ground at harvest. What would this fruit have been worth if it had been protected from the insect and fungus damage that put it where it is? How many sprayers would it have paid interest on? How much spray material and labor would it have bought?

Lack of thoroughness in spraying is a vital factor in causing poor results at harvest time. Poor spraying, in most cases, is the result of inadequate equipment. Sprayer capacity, measured on the basis of one-half gallon per minute per acre is none too ample in an orchard or grove of mature trees.

A Billion Dollar Fruit Crop

HE farm value placed on five important fruit crops for December 1st by the bureau of crop estimates is \$466,504,-000. Of this amount, apples stand at the top, with a valuation of \$271,984,000 for the total apple crop, and \$132,066,000 for the commercial crop. Peaches are next in this list, with the crop valued at \$91,863,000. Oranges have the next valuation, \$70,125,-000, while the pear crop is valued at \$27,-220,000 and cranberries at \$5,313,000. estimate is placed upon the values of other fruits such as grapes, raisins, lemons, prunes, berries of all kinds and less important fruits that are grown commercially. But it is safe to assume that these fruits have values in excess of the five that are named, and that the farm worth of the fruit crop of 1920 is somewhat in excess of a billion dollars. That being the case, the fruit crop for the year might be said to equal in value the entire wheat crop, which is placed at \$1,135,806,000. It exceeds the value of the cotton crop and is worth about one-half that of the corn crop. And still we say the fruit-growing business of this country is small as compared to what it should

Discuss Business Matters

N THE addresses on the programs of horticultural meetings for this winter, there is a greater number of assignments to such topics as standardization, legislation, tariff, transportation, credits and other purely business topics than have been obpurely business topics than have been observed in any previous year. The horticultural side of horticultural meetings is yielding to those topics which more directly affect the profit-making side of fruit growing. And well it may. The day has passed when fruit growing is a pleasurable pursuit. It is a business, and horticultural societies that neglect to discuss the business problems affecting their membership will die of senility in their youth.

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When to Spray and What to Use

A Convenient Spraying Calendar for the Use of American Fruit Grower Readers

Mesetions for the home manufacture of the important spray materials will be found on page 20 of this issue. There are three important factors to observe when spraying, these are the use of the right material; the application at the right time, and esough care in spraying to thereughly wet the the upper and lower surface of every twig, leaf or fruit. Neglect of any one of these three factors will lessen or ruin					Section (Section)	STRAWBERRY	NOTIFIED AS THE	
					Kemarks			
the chance fo	e success. If you	a experience any difficulty in	your spraying work, or want	A MARK 2975 J. 1977	Bordeaux, 4-4-50.	Before blossons open. Additiona applications if spot appears.	off and burn foliage a	
aditional ini	termation, write	AMBRICAN FRUIT GROWE	n, State-Lake Bidg., Chicage	See See	Carlo Carlo	PLUM	are picked.	
		APPLE		San Jose Scale	Lime-sulphur, 1 to	8. When tree is dormant.	1.	
What to Spray fo	Time sulphur Tto 8	When to Spray	Remarks	European Fruit Scale Curculio	Line orbit	Neille to chemically	2	
San Jose Scale Oyster-Shell Scale Scurfy Scale	Scalecide. Miscible Oils	leafless.	from caustic action of Lime-sul- phur on the skin.	Brown Rot Leaf Spot	with 2 lbs. Arsonate of Lead.	Similar to cherry, which see.	Brown rot spreads very warm, moist weather controlled only if fr	
Apple Aphids	Nicotine, 1 to 800	In spring when buds are bursting showing green tips.	Of no use after leaves are curled. Use high pressure.			100 100 100 100 100 100 100 100 100 100	coated.	
Scab Black Rot	Lime-sulphur, 1 to 40	When flower had above wink but he	In severe cases of cankerworm use	Fire Blight	PEAR Blight Spraying ineffective. In some cases where particular care is taken, prompt and set the first sign of blight, districting tools and wounds aublimate solution, may check its spread to some extent.			
Bud Moth Cankerworm	nate of Lead.	fore any have opened. (Other sprays as recommended for codlin moth, below, will incidentally control troubles in this group.)	g water with twice as much slaked lime.	1 1 1 1 2 2 1 1 C		the first sign of blight, disinfective sublimate solution, may check its sp	disinfecting tools and wounds with heck its spread to some extent.	
Tent Caterpillar Codling Meth	Lime-sulphur,1 to 40	(1) When most of the petals have fallen (calyx spray). (2) Approximately three weeks after the bloom.	about July 1) discontinue lime- sulphur and use Bordeaux, 4-4-50, with 2 bs. Arsenate of Lead	Scale Insects Blister Mite Pear Psylla	Scalecide. Miscible Oils.	In dormant season, preferably early spring.	Scrape dormant trees at erchard trash to aid in trol.	
and the	with 2 lbs. Arse			Practically all th		es and insects on the apple are also fou		
E LEWIS AND	Arsenate of Lead, bloom,			CITRUS FRUITS				
ASTA JOS	2 lbs. to 50 gals water.	(4) Fifteen to seventeen weeks after bloom.	may be three broads in one season.	White Fly	Oil emulsion, 1%.	In spring, about two weeks after spring brood of adults has disappeared.	Repeat in late summer	
Blotch Curculio	Lime-sulphur,I to 40 with 2 lbs. Arne- nate of Lend.	(1) As in (2) under codling moti- (above) except two weeks after bloom in south.	Clean orcharding assists in curculio control. Spraying not always wholly effective.	Purple Scale	Oil emulsion, 1%.	As for white fly.	weeks after the adults appeared. Do thoroug	
	COLUMN TRANSPORT OF THE PROPERTY OF THE PROPER	1/0\ Amazonimatala fina macha after the			Oil emulsion, 1%.	As for white fly.	In case of beavy infe second application a made a month after b	
E BEARING	with 2 lbs. Arse- nate of Lead.	fall of the bloom; (3) As in (3) under codling moti			The first of the same of	Contract Con	made a month after b	
eoty Blotch ly Speck		Usually checked as incidental resul- of applications recommended above	and water drainage is poor.	Rust Mite	Lime-sulphur,1 to 75	Apply thoroughly in June on trees not previously sprayed with lime-sul-		
Bitter Rot	Bordeaux, 4-4-50.	Where disease is looked for begin spraying in early summer, making applications often enough to keep		Thrips	Lime-sulphur, 1 1-3	when one-half of the petals have dropped.		
ipple Rust or	Suraving net effec-	fruit coated. Remove codar trees nearby.	The rest cannot live without ceders	Scab	micotine sulphate Bordeaux, 3-3-50.		Most by Change	
Cedar Rust	tive.	See under Pear, Fire Blight.	on which it spends part of the year.	Scale	BUCKEUX, 8-3-30.	Just before the new growth.	Must be followed by tw tions of lime-sulphur a of one month.	
	artabe Denta	PEACH	0.7 1.55 (46.5)	100		ASPARAGUS		
an Jose Scale	Lime-sulphur, 1 to 8.	Any time in dormant season but not later than two weeks before bloom	Market Company Company	Hertles	Arsenate of Lead 4 lbs. powder to 56	When beetles first appear, followed at ten-day intervals as pecessary. Also on old plantations after cuttings	Do not spray while cutti	
urculio	Arsenate of Lead, 2	in spring. (1) About ten days after the bloom, as	Before growth begins clean grass and	Children and		cease.		
Contact of	lbs. in 50 gals.	the shucks are being pushed off by the young fruit. Others as given	weeds out of fence row and around trees. Plow middles.	Rust Control by sprayin unsatisfactory.		Permit no plants to mature during Secure resistant variety, mette.		
cab Irowa Rot	Self-boiled lime-sul-	below for scab and brown rot. (1) About four weeks after bloom. (2) Midseason and late varieties may	Do not spray nearer than two weeks			BEAN		
TOWN MOL	Amenate of Load.	require an application of self-boiled lime-sulphur alone, four to five weeks before fruit ripens. If	to picking time.	Anthracnose	cased pods.	(1) As plants break through ground. (2) When first pair of leaves expand. (3) When pods have set.	seed was seed only for	
	STANSON FOR	weeks before fruit ripens. If weather is damp and warm addi- tional sprays will be necessary.			Bordeaux, 5-5-50.	(o) when plays have set.	plants, preferably from free locality.	
lorees	Preventive washes,	Dig out with knife and wire in fall and	Trees must be looked after twice	8.11		CABBAGE	AND A LOTTE OF	
	mechanical protec- tors, etc., of little value.	spring, then mound up earth around trunk 8 inches.	yearly.	Cabbage Worm Cabbage Looper	Arsenate of Lead, 2 fbs. to 50 gals. water; or hellebore, 2 oz. in 1 gal.	Arsenate of lead when worms first ap- pear. Repeat as necessary till heads are formed. Then use helle-	Add a little soap to the make the poison stick	
ummods		Hardly a disease but an indication the favorable condition, such as an unc	congenial soil. Discover and change	Cutworm	2 oz. in 1 gal.	bore. Wrap paper around the stem when	STATE OF THE PARTY	
lacterial Shot		the unfavorable environment for the Spraying helps but indirectly. Keep cultural methods and application of	be better.	100 mg (200 mg)	Pull up and burn	plants are set, sinking it in soil.		
Hole		CHERRY	plant food.	25	DEATH HAVE BEEN TO BE A SECOND	Spread lime on ground in spring, 1 lb. to 8 sq. ft. Work it in before setting plants.	land. Do not wet disease	
an Jose Scale orbes Scale	Lime-sulphur, 1 to 8:	While tree is dormant.	No scale on sour cherry.	Black Rot	Pull up and burn plants.	Soak seed fifteen minutes in corrosive sublimate to kill spores wintering		
orbes Scale	CONTRACTOR AND A STATE OF THE S	MATTER A CONTRACTOR AS A STATE OF	In some localities it may be safer to	7	MELONS	CUCUMBERS AND SO	UASH	
rown Rot out Spot bot Hole Fungus	unite of Lend.	(1) Just before buds open. (2) Immediately after blossoms fall. (3) About ten days after (2). (4) Additional sprays if pecessary at two-week intervals.	dilute the lime-sulphur somewhat, preventing foliage injury.	Bacterial Wilt		Kill the beetles which spread the dis-	Charles made	
herry Aphia	Nicotine sulphate, 1	two-week intervals.	Be careful to cover underside of	Anthracnese Downy Mildew	Bordeaux, 4-4-50.	case (as below). When vines begin to run. Follow with two more applications at two or three-week intervals.	Use a short spray red w	
		When aphids first appear before they have caused the leaves to curl.	Be careful to cover underside of leaves. Use high pressure and soap.	Melon Rust Striped Beetle	Rordenny 4.4.50	with two more applications at two or three-week intervals. As beetles appear. Repent as neces-		
herry Slug	lbs. to 80 gals,	On first appearance of insects.		建 二四个是	with 2 lhs. Arse- nate of Lead.		The second second	
	water.	ANT AND GOOSEBERR	Variable margin such ten	Melen Aphis or . Louse	Nicetine sulphate, 1 to 1,000.	On first appearance of lice. Repeat as necessary. Pull up and burn badly infested plants at once.	LE PRETITE	
naf Spot athracnose	CONTRACTOR OF A LABOR CONTRACTOR OF THE PARTY OF THE PART	Beginning as soon as the leaves are opened make five to seven applications at two-week intervals.	Later and or to take	Squash Bug	Establish Control	Pick the bugs and crush them. Place samall piece of board near the hills,	May cover plants with cital	
THE STREET		tions at two-week intervals.	and the particular			samall piece of board near the hills, collecting bugs found underneath every morning.	in held after first frost.	
in Jose Scale ster-Shell Scale strant Worm	Similar to apple, which see above.	At the first appearance of the worms.	Day hellebore may be directed on it		Assigned	the state of the s	and burn cucumber insec will collect thereon is has bers.	
Tant Worm	lbs. to 50 gals.	At the next appearance of the worms. If there are two broads repeat spray.	near picking time.	是100000	A PARTIES	CELERY	rested of Land	
rrant Plant Louse	Nicotine sulphate, 1 to 800 of water.	Seca after eggs hatch in spring (soon after the leaves open).	Thoroughness necessary, hitting all leaves from beneath.	Lenf Spot	Bordeaux, 4-4-50.	On young seedlings in seed bed. Fol-18 low by three later sprayings at	than others.	
GRAPE				low by three later sprayings at than others.				
ck Rot -	4-4-30.	(2) After blossoms have fallen.	Careful winter pruning and disposal of diseased wood with application	Early Blight	Berdeaux, 4-4-50.	POTATO When plants are 6 inches high. Mahe[]	Bordeaux-arsenate of lest	
ldews	Total de la companya	Iwo or three others at 19-14 day in- tervals.	of diseased wood with application of lime-sulphur (winter strength) in dormant season aids in an- thracnose control.			two more applications at two-week intervals.	usual combination spay i to field diseases.	
rry Moth	Bordeaux, 4-4-50, I	Follow program recommended above when these insects are prevalent.	Dusting with fine sulphur is recom-	Late Blight Tip Burn	Bardeaux, 4-4-50.	Continue spraying above at two-week intervals if thought necessary		
at Hopper	mate of Lead.	(1) As soon as beetles are prevaient.	ropean origin for mildew control.	Colorado Potato Bectle	Amenate of Lead, 2	throughout season. When young bestles first appear. Repeat as new breeds hatch.	Vhen Bordeaux is used in	
No.	with 2 lbs. Arec-((1) As soon as beetles appear. (2) Ten days after.		Flea Beetle Scab	water or Bordeaux.	peat as new groots natch.	the Fica beetles.	
	7 10 21 2 3	Control of the Contro	CONTRACTOR OF THE STREET AND ASSESSED.	Secret belle		Soak clean tubers in one pint formalde- hyde to thirty gal. water two bours, then dry and cut to plant.		
and Rust		BERRY AND RASPBER		Sea Physics	ded Som Law	TOMATO		
ne Blight	infected plants as	Since these diseases are perennial in the cases, spraying is useless after test infection occurs.	ground previously infected.	Fuserium Wilt	Spraying ineffective.	Develop resistant strains. Sterilize soil (in green houses).		
threcase	rected.	1) In spring before growth starts (2% gal: in 50). 2) When now shoats are 6-8 inches	and a significant section of	Anthracnose Blossom End But	THE RESERVE THE PARTY OF THE PA	keep plants up from ground.	National Control of Control of Control	
The time in the	Cities De title	high (1% gal, in 30).	War is obvious and	Early Blight		ture of excessive monsture. Strike a pro As for Might on potation, which see.		

Frower

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oap to the water

A Complete Paint Line

Compete Furning ma-s will save your crops, so Glidden Paints and Var-save your buildings and ment, Here too you'll find to every need from Todurance Paint to

GLIDDEN Sprays for Fruit Surety

Why Spray? To get a better crop, a surer crop, a larger crop, and finally to get more money for it.

That much is sure - and you can be just as sure that scale and all other pests will come-so prepare in advance, use a dormant spray of Glidden Dry Lime Sulphur.

Remember, the spraying time is short and you must be sure of results. You cannot afford to run risks with uncertain spray materials. Use Glidden Dry Lime Sulphur it kills the pests surely and quickly.

If you cannot locate the Glidden dealer, write to the nearest Glidden office listed below.

Send for the Glidden Spray Calendar. It tells when, how and what to spray. It's Free.

THE GLIDDEN COMPANY, National Headquarters, Cleveland, O.

Cieveland, Chicago, San Francisco, Ostkland, Reading, Baltimore, New Orleans, St. Louis, St. Paul, Brooklyn, Toronto.

New York, Chicago, Kansas City, Boston, Scranton, Evansville, Birmingham, Baltimore, Pittsburgh, Portland, Atlanta, Dallas. Houston, Beaumont, El Paso, Olympia, Wash., Des Moines, Memphia. Seattle, Oklahoma City, Montreal, Winnipeg. Stocks in principal cities.

Other Glidden Products for the Farm

lered Arsenate of Calcium dered Arsenate of Lead dered Bordeaux Mixture dered Bordo-Arsenate

Endurance Paint (Prepared)
Endurance Auto Finishes
Barn Paint (Red and Gray)
Tractor and Implement Paint
Floorette & Wearette Varnishes

INSECTICIDES



The right kind of cultivation does much to make good crops grow from the seed you plant.

Good cultivation loosens and stirs the soil around the young plants and lets the air down into the roots. The roots can then grow down into the soil where there is nourishment—the plants have a better chance to grow to full size.

Early and regular cultivation pulls growing weeds up out of

the ground before the roots get firmly imbedded in the soil. The weeds are pulled to the surface where they dry up and die. They do not have a chance to dry out the soil by taking moisture from it. "No weeds" mean that all the life-giving moisture goes into the crops where it

Your small tractor and "EMPIRE" Cultivating Implements, working together, enable you to cultivate properly. With the small tractor, you can run closer to the growing crops. With "EMPIRE" tools you can stir the soil good and deep-you can keep the earth mellow and clean of weeds. "EMPIRE" engineers work closely with the engineers of the tractor companies to give you the kind of tools you need to grow good crops.

The complete "EMPIRE" cultivating set consists of beet sweeps, furrower, hillers, shovels, and necessary bolts and standards. Get an outfit from the dealer who sold you your tractor. Ask him about the other specially designed "EMPIRE" Implements listed here.

It outlines in plain language how to plow, prepare a good seed bed, and cultivate. Ask your dealer to reserve a copy for youor write us, giving the name of your tractor.

THE EMPIRE PLOW CO., CLEVELAND, OHIO

The "EMPIRE" booklet, describing how to raise good crops, is now being prepared.

Orchard Problems and their Solution by Paul C. Stark

Questions are invited from readers upon any fruit growing topic, Let us help you solve your orchard problems. Address Paul C. Stark, Care American Fruit Grower, State-Lake Bldg., Chicago, Ill.

RENOVATING AN OLD ORCHARD

Last summer I purchased three acres of land which was set to an orchard about 10 years ago. For the first two years it had some care, but since that time it has been ravished by bugs and disease. I found that the apple trees were set 32 feet each way, with fillers of plum, cherry and peach. I have scraped all the rough bark off and cut them back, or rather shaped them up, have mulched and put wire tree guards around them. I will spray with scalecide or sulphur in March and in April I will give them two pounds of nitrate of soda, and next summer the usual spray of Bordeaux lead arsenate and nicotine sulphate. Am I making blunders and, if so, will you set me right?

YOUR procedure seems about right and if more people would follow your example, many of the neglected orchards would be saved from destrucorchards would be saved from destruc-tion. In addition to your plan, I would recommend that you follow a system of cultivation and apply ma-nure. As your trees are doubtless large, four or five pounds of nitrate of soda per tree would be better than two pounds.

STAYMAN-A COMING APPLE

Have just read your note and answer to A. G., Iowa, in December issue and would like to state that you are absolutely correct and that I have a 10-year-old orchard with 220 Staymans, that I have had three good crops in succession and some trees picked seven bushels this year.—E. L. F.,

STAYMAN Winesap is surely and steadily coming to the front as a quality apple, and one which will bear regularly and produce splendid profits. The day of quality apples is here and the public is discriminating strongly in their favor. This is clearly demonstrated by the market quotations. The placeter who puts a unit of the public is discriminating strongly in their favor. tations. The planter who puts out a new orchard and ignores this condition will be a sorry man when his orchard comes in to bearing. He will find that he has made a mistake if he fails to plant quality apples—the kind that sell high and are always in

FERTILIZING YOUNG TREES

FERTILIZING YOUNG TREES
Last April I planted a number of Stark Delicious, Wealthy, McIntosh Reds and other varieties of apple trees, with pear and peach trees as fillers. Some of the land on which these trees are planted is gravelly and atony and the loam is rather shallow. I do not want to plan cover crops, so what would you recommend as fertilizer for these trees, how much per tree and how applied? I pruned these trees after planting, how soon should they be pruned again?—N. E. D., Massachusetts.

ONE of the best fertilizers you can use would be barnyard manure. This would accomplish the same results as the use of cover crops, as it would add both humus and plant it would add both humus and plant food. If you cannot get the barnyard manure to apply to these trees, I would suggest that you use nitrate of soda or sulphate of ammonia, both of which are nitrogenous fertilizers and are very quick acting. On trees one or two years old about one-half pound per tree applied just as the tree starts to grow in the spring will give good results. Your trees should be pruned in late winter or early spring before they begin to grow. Do not prune too heavily, but thin superfluon branches and head back moderately. Be sure to start cultivation in the spring and give frequent and inter-sive cultivation especially during the early part of the growing season.

PLANTING FOR POLLINATION AND CONVENIENCE
I am planting this winter 500 each of Grimes Golden, King David, Jonathan and Maiden Blush apples. How would you mix these varieties to secure best inter-pollination? Part of the land is very poor. I expect to put Grimes for one on this land, as have been doing well on land perhaps even poorer. Which of the other three would you put on this poor land, giving due consideration to pollination?—C. R. S., Oklahoma.

TOR convenience in picking and to

C. R. S., Oklahoma.

FOR convenience in picking and to separate your red apples so as to prevent mixing during picking I would plant as follows: four rows each in the order named, Grimes Golden, King David, Maiden Blush and Jonathan. If planted in this way, I believe you will be sure of good inter-pollination. Some orchardists prefer eight rows of variety and that gives good results under ordinary circumstances, but when there is an unfavorable season for pollination, the four-row method will be the safest plan. In addition to the Grimes, I would suggest that you put Jonathan on the poorer land, but start at once to build up your land with Jonathan on the poorer land, but start at once to build up your land with manure, cover crops and fertilizers.

SWEET CHERRIES

Will the Gold cherry do well in the section, also what quince and aprior are best suited here?—F. H. W. Illinois.

THE Gold cherry is one of the sweet cherries that has proved hardy and successful over a wide are and it should be all right in your section. I have fruited this variety on my own grounds and it is the surest bearer of any variety of sweet cherry which I have ever tested. The fruit is of good quality, good size and clair yellow color. I have found Stella and Superb the best hardy apricots, and Orange and Vandeman the best quinces.

VARIETIES IN MICHIGAN

Will you inform me which of the following variety of apples—King. Delicious, Winter Banana and Jonathan—you would consider preferable to plant in a five-acre orchard now containing Baldwin, Northern Syr. Sweet Bough and Twenty Ounce? Also would it be harmful to prune in a moderate way old, somewhat neplected trees that were pruned last winter and are reviving nicely? By Jonathan an early bearer?—H. H. T. Michigan.

Michigan.

A LL the varieties named are god.

A Delicious would be my first choice.

Jonathan second, Winter Banasa
third and King fourth. Would any
gest that the pruning be done in the
late winter and that you make only
moderate thinning out of branches,
heading back slightly: Do not continue to prune these trees too heavily
or it will throw them out of bearing
A Jonathan bears reasonably young.
King is later coming into bearing and
the tree is subject to collar rot. For
this reason it ahould never be planting
I would not consider planting it at all

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The fruit is and clear Stella and ricots, and the best

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preferable chard now thern 807, unce? Also what negrouned last nicely? B—H. H. T.

earing rot.

. Stark,

Concord Grape Industry

(Concluded from page 8)

tely planned, gluts in some important arket center. The grower should be mettly interested in preventing such arket gluts.

Many times the reckless, unre-sized rush to get the crop off the es and in the market is the cause of market gluts and consequent fall prices and loss to the foolish grow-

in prices and loss to the foolish growes that follow that practice.

There is not one vineyard in 50 that cannot be picked for a period of from three to five weeks, so there is no possible excuse for this mad rush to be the first to finish picking in a neighborhood. Suppose a few berries do drop off. The loss is but a few pounds per acre, while the indiscriminate picking and consequent flooding of the markets with an oversupply, creates a price loss that amounts to many times more than the value of the few berries that might have fallen fithe crop had remained a few days larger on the vines.

If the crop had remained a few days mager on the vines.

A central organization would try to create a steady flow of tonnage, by the companies of the care and use the markets to their best and the companies of the care and use the markets to their best advantage.

Put on the Roof

What would you think of a man who would spend thousands of dollars in halding fine serviceable buildings on his farm, complete in every detail excepting that none of them had a roof? Would you not say that he was either cary or a fool? Well how much different is he from the grower that puts a whole year of labor and expense into a grape crop then enter the shipping season without containers to ship his cop in? Is there a more stupid thing season without containers to ship his cop in? Is there a more stupid thing that a man can do than grow the crop and then trust to his business enemies to come around and pay him the best market prices and furnish him the container as well? Is it any wonder we have never received the cost of production for our grapes until the

production for our grapes until the last couple of years?

It is a positive fact, admitted by every association handling grapes this year, that lack of containers to ship a was the chief cause why the general average of prices was not higher. A survey of the belts will show that the prices received for the grapes as in a fair ratio to the amount of A survey of the belts will show that the prices received for the grapes was in a fair ratio to the amount of containers available, the highest prices paid being to those associations that had plenty of Jumbo Climaxes to ship and this association reached in one abpanent the high water mark of \$200 gross weight a ton, and the general average of the season's sales of this association was \$141.17 a gross ton. Their growers were nearly all supplied with containers that could be shipped anywhere and the dealers knew it, so they paid the limit of the market in order to get the grapes.

Hence if there has been any one factor responsible for poor returns it has been the lack of containers. Will we be fools to repeat this error again? I hope not. The average vineyard of Concord grapes contains some five to eight acres. The owner of such a vineyard, because of its relatively small size, is not able independently to ship and sell on the markets of the nation and obtain the same advantages as a flower having a much more extensive sereage. For the small owner, his only

and obtain the same advantages as a grower having a much more extensive arrange. For the small owner, his only protection against the gambling fraternity is to organize, and mass their acreage into one big pool, with a central head and to sell the product as a unit. The prices, the terms and the markets would be better and much more available, and the producer would be able to get away from the speculator. Then, loyalty to such an organization is the keystone to success and the one thing that will enable it to function to the limit of its possibilities.

TOP-DRESSING TALK No. 3

Fertilizing the Peach Orchard

Nitrogen Shows Good Profits

"Where would I have been had I not fertilized my peach trees this year with nitrogen?"

This was the remark of one of the prominent peach growers in northern Ohio, who wore a broad smile as we looked at his ten-year-old orchard covered with a dark green luxuriant foliage and supporting a fine crop of peaches that has averaged over three bushels per tree. The trees had pushed out a fine new twig growth on which he saw the possibility of a large crop next season.

As we passed through the orchard and arrived at the rows which had not been fertilized, the grower's face

became more serious looking.

"These trees," he said, "were left just to show my neighbors and me what the nitrogen really did accomplish, and they also remind me what my year's returns would have been if I had not fertilized the eight acres."

Nitrogen Gives Vigorous Growth

Nitrogen is the element which produces vigorous vegetative growth. An abundance of nitrogen is indicated by large dark green leaves, vigorous fruit buds and long terminal growth. The peach tree bears its fruit on wood grown the previous season, and the producing power of the tree is directly proportional to the amount of wood growth made the preceding year. The accompanying picture shows the effect of nitrogen in increasing the fruitbud bearing area of the tree.

In the fertilization of the peach tree the problem is to apply a sufficient amount of quickly available nitrogen early in the spring (two to three weeks before the blossoms open) to enable the tree to produce plenty of wood growth so that there will be formed fruit buds for next year's crop, and a large leaf surface for the manufacture of starches and sugars used by the growing fruit.

Arcadian Sulphate of Ammonia as a Fertilizer of Peaches

The fact that an early application of quickly available nitrogen is needed, makes Arcadian Sulphate of Ammonia especially desirable in the peach orchard. The nitrogen of this fertilizer is quickly available and will stimulate the tree to early vigorous growth. As it is a non-leaching form of nitrogen it can be spoiled in the spring without denger applied in the spring without danger of large losses from leaching by the

Amount of Arcadian Sulphate of Ammonia to Apply

In the mature orchard, on the poorer soils, three to six pounds per tree may be recommended. On richer soils, where growth is naturally fairly good, from two to three pounds will be sufficient. The size of the tree should to a large extent govern the

RESULTS FROM NITROGEN FERTILIZATION OF PEACHES PERTILIZED W B 0.03 PRODUCED ONLY ON NEW GROWTH

The average yield per tree here was about one-third of a bushel, and the appearance of the trees with their scant foliage of sickly yellow leaves made us fear they would not live long unless fertilized.

"There is one thing certain in my mind," commented the grower, "and that is my peach trees need nitrogen." There is no doubt but that the grower was right and that nitrogen is the most important fertilizer for the peach.

Reports from the State Agricultural Experiment Stations who are testing fertilizers on peaches verify this fact.
The West Virginia Experiment Station reports on

their peach orchard experiments as follows:

"The average gross income per acre per year from all the nitrogen plots was \$468.85, and from the non-nitrogen plots was \$275.43."

Paul W. Thayer of the Ohio Agricultural Experiment Station concludes from his five years' fertilizer experiments with peaches in northern Ohio that the peach tree responds profitably to an application of nitrogen, with the production of strong new shoots upon which the fruit buds are found and the foliage necessary to the nourishment of a large crop of fruit.

After three years of experimental work the Oregon Agricultural College reports that they clearly demon-strated the value of quickly available nitrogen in restoring the vigor of peach trees and increasing the size of the fruit and yields. The nitrogen plots produced four times as much fruit as did the non-nitrogen plots. It was noted that the nitrogen-fed trees "were in such vigorous condition that they withstood the frost much better." Method of Applying Arcadian Sulphate of Ammonia

Arcadian Sulphate of Ammonia may be applied by hand over the region of the feeding roots, which is approximately two feet from the trunk to a few feet beyond the outer limits of the branches. When broadcasting over the entire orchard seems advisable, Arcadian being fine and dry may be applied with the grain drill, set to apply from 150 to 300 pounds per acre.

Sulphate of Ammonia is the well-known standard article that has done you good service in your mixed fertilizers for years past.

Arcadian is the kiln-dried and screened grade, made fine and dry for top-dressing purposes. Ammonia 251/4% guaranteed. Made in U.S.A.

Write Desk No. 1 for free booklet No. 8, "The Use of Sulphate of Ammonia in the Fertilization of Peaches."



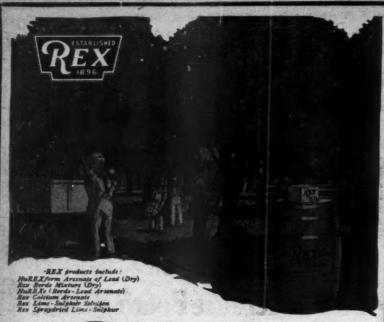
(See talk No. 2 in last month's issue of the American Fruit Grower for list of dealers handling Arcadian)

Berkeley, Cal. Medina, Ohio



Baltimore, Md. Atlanta, Ga.

AGRICULTURAL DEPARTMENT, NEW YORK



F X form **ARSENATE OF LEAD**



When you spray your orchard with arsenate of lead you want it to stick to the leaves and fruit. The longer it sticks, the less often will you have to spray.

You also want it to cover every part of the fruit and foliage; and the better it does this, the better the protection it gives.

NuREXform does these things because it is an improved lead arsenate. It contains a special substance which causes the arsenate of lead to stick tightly, even through severe wind and rain This same special substance prevents the fine particles of poison from adhering to each other. NuREXform thus remains longer in suspension and does not collect in spots on the leaves and fruit.

As a result, a government entomologist found that trees sprayed with NuREXform had only

ONE-THIRD AS MANY WORMY APPLES

as those sprayed with old form arsenates of lead.

No fruit grower can afford to use an old form arsenate of lead when an improved product like NuREXform can be bought for the same price. Such scientific tests as the above show that NuREX form is worth fully 50% more, yet it is sold at the same price. Judged by what it does, is the cheapest spray material on the market.

NuREXform is sold in containers ranging in size from 1/2-lb. cartons to 200-lb. drums. the coupon-today.

THE TOLEDO REX SPRAY CO. Toledo, Ohio

The affiliated Rex Spray Com

ter, New York on, Ont., Canada | Ohio North Yakima, Washington Wenatchee, Washington Benicia, California Payette, Idaho Kansas City, Mo.

THE TOLEDO REX SPRAY CO.
Toledo, Ohio

Please quote me your special price on

.....lbs. of NuREXform.

P. O. Address

We Must Have Better Tarriff Protection

By Samuel Adams, Editor

42 truck loads of lemons here.
Maybe you can buy cheaper."
What would you say if some foreigner interrupted your sale of one truck load of lemons with a speech like that?

I expect that the words you would use couldn't be found in the dictionary. But the tragedy of it is that what you would say or do would not help one little bit to hold the price up on learners.

Self-preservation is a stronger in-stinct than patriotism, and the buyer would surely take advantage of the situation and put the market as low

as he could.

"Oh, well," you say, "a thing like that won't happen because they can't haul lemons across the ocean in

But they do haul lemons across the ocean in ships and a constant stream of boats loaded with Sicilian lemons making Atlantic coast ports has de-moralized the lemon market for months.

But who is going to stop it?
The United States Government. And how?

By slapping a protective tariff on lemons and on everything else in which foreign growers now have an

unfair advantage.

But congress works almighty slow— except in times of war when a nice big hunk of Uncle Sam's money can be slipped out the back door to manufacturers and politicians who may be very useful in the next congressional election.

election.

Congress is "thinking" about putting on protective tariffs, but it takes a long time for those fellows to "think it out." What they need is our help.

You and I know what crops must be protected at once. Why keep it a secret? Let's shout it in the ears of every congressman, and keep on shouting it until he passes the laws we hired him to pass.

But here's what I'm getting at. We need some way of getting quicker action on emergencies of this sort that

JUST a minute, Mister! I have 42 truck loads of lemons here. Maybe you can buy cheaper."
What would you say if some former interrupted your sale of one 12 to 12 t

tain tariffs might be safely removed.

We don't want an unfair advantage over anyone. Neither do we want anyone to have an unfair advantage over us. And protective tariffs are for the very purpose of making the American market fair to everyone. If the Sicilian lemon growers didn't have an unfair advantage over American lemon growers, their shipments would not force the market below a stage that is unprofitable to us her. If we had the necessary protective.

stage that is unprofitable to us hen.
If we had the necessary protective
tariff on lemons right now, it wouldn't be a hardship to Sicilian growers, not to our own growers, nor to the consuming public.

suming public.

The newspapers do a lot of hollering about prices being reduced for the "poor working man." But I'm telling you that there wouldn't be any abnormally high prices to be reduced it the farmers were treated fairly.

The reason that prices get high sometimes is because somebody has taken an unfair advantage of the producer and the thing has reacted. Then it always a reaction from an abnormal condition, and it is the simplest logic in the world to say, "If then never are abnormal conditions, then never will be reactions."

A fair-minded commission of me

A fair-minded commission of me who are themselves farmers would avoid abnormal conditions and swould keep the market steady and fair-minded and seep the market steady and fair-minded and seep the market steady and fair-minded commission of me who are themselves fair-minded conditions and so would also a second and fair-minded commission of me who are themselves fair-minded conditions and so would also a second and so would also a second and se for everybody-producer and

sumer.

Let's have it. Let's all say, "We will have it!"

Second Bloom on Apples Makes Big Crop

By Ralph S. Griswold, North Carolina

URING the past season I observed a phenomenon in my orchard which I consider to be very much out of the ordinary, and I would like to hear from the readers of the American Fruit Grower who have observed or experienced a similar happen. observed or experienced a similar happening. The orchard in which this phenomobserved or experienced a similar happening. The orchard in which this phenomenon was most pronounced is composed mostly of Red Limbertwig apples, with just a few trees of summer and fall fruit. The orchard is about 2 acres in extent, with 200 trees, and is located on a gentle slope to the southwest, the elevation being about 2,000 feet. Our town of Gilreath is on the watershed of a little spur running out from the Blue Ridge mountains to the east, in the northwestern corner of North Carolina, and is known as the Brushy mountains.

The orchard was set over 30 years ago, but badly treated until 1910. The sassafras, persimmon and gum trees were higher than the apples. In 1911 these intruders were cleaned out, and in 1913 I secured the property. I found the trees ranging from 7 to 10 feet in height, mere dwarfs, which for years past had grown only a fraction of an inch each year. The soil, due to erosion, was very thin and poor.

In the spring of 1917, a good catch of clover completely stopped erosion. The

each year. The son, due to the very thin and poor.

In the spring of 1917, a good catch of clover completely stopped erosion. The clover grew waist high in 1918, and was cut until the fall of 1919 when the sod was turned under. The cutting of clover had

all been used as a mulch under the treation of apples were obtained in 1913, 1915 and 1917. The next year was an off-year with no fruit, and in 1919 a late freeze in the spring spoiled a fine setting of fruit. In the spring of 1921 the trees put out an abundance of full buds, but a 26 degree freeze on April 3th and 29 degrees on April 13th killed pradically every Limbertwig bud. The summer and fall apples, due perhaps to the later blooming time, were hurt but little. I gave up all hope of a crop this year, but to my great surprise, late in April the trees put out a splendid bloom. Limbertwigs usually bloom about the middle of April, and on investigation found that the trees had put out an entirely new set of buds on wood which grew in 1919. A short time later, as growth of 1920, which was scarcely inches long, put out a profuse bloom. Perhaps I have not been a careful reader, but I can remember no mention of the probability, or even possibility of such an occurrence either in hort-cultural books or magazines. Since this occurrence, old settlers have told manbout having seen, at rare intervals, "second bloom" and I imagine that the probably refer to some similar occurrence. Would it be fair to draw the conclusion from these facts, that if a orchard is in good enough condition, will bear fruit whether it has two-year old fruit spurs or not?

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Consider the SprayerNow

By V. H. Matthews, Illinois

By V. H. Matthews, Illinois

F COURSE, every fruit grower, even though he may have had no more than one season's experience, well appreciates the fact that spraying is no longer an optional practice. The ever increasing culture of fruit quite naturally makes more amerous the insects and diseases which prey upon such plants. One might as well, therefore, attempt to mise fruit without planting the trees to consider that a marketable product can be produced without spraying. At the same time the long campaign of education and advertising of the arious brands of fruits has finally home results and the buying public is constantly and rapidly becoming more particular with reference to the absence of worms and blemishes from the articles that they place upon their tables.

Some one has aptly said that "time-

me one has aptly said that "time-thoroughness and proper ma-s are the watch-words of the terials are the watch-words of the secessful sprayer of any crop"—and these three features are so closely dependent upon one another that a lack of completeness in any one of them may almost entirely wipe out the benefit derived from the efficient uses of the others.

Consider the Equipment

of the others.

Consider the Equipment

Although a man may have the most inimate knowledge of the insect or disease against which he is applying the protective spray; although he may mix his solutions perfectly; and although he may make the greatest persual effort to apply the spray properly, poor equipment reduces his speed, the condition of his materials, its thoroughness of his work—and depreciates his religion. A discouragingly large proportion of growers are landicapping themselves by the use of spraying equipment which is either cheap, worn out, or entirely inadequate from point of size.

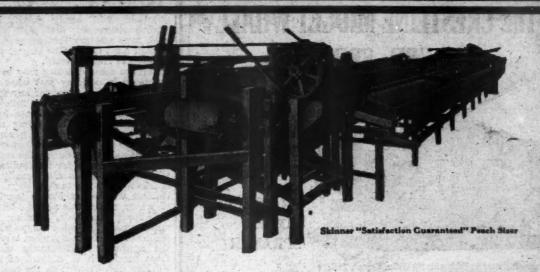
If new equipment must be purchased for use next spring, that fact is probably pretty well known right new. If so, the order should be placed with dealer or manufacturer now. Never again should growers delay placing their orders well in advance of the time when the sprayer will be needed. For hundreds of men, this last season was a disastrous one in this respect. One sprayer manufacturer alone reports that his company last spring returned remittances amounting to several thousand dollars, simply because it was a physical impossibility to supply the demand within the few weeks allowed them.

Just as much interested in the service which they themselves give their customers as they are in the service of their equipments. The two usually go hand in hand, but it is absolutely impossible for them to obtain sufficiently trained and competent labor to save the hundreds of growers who terry season delay the ordering of both complete sprayers, repairs and accessories until the spraying season is actually at hand. Delays such as these are costly to all concerned and are perhaps quite often as much the fault of the grower as they are of the manufacturer.

The Size Needed

The Size Needed

If a new sprayer must be obtained, member this—"It is not the first test that makes a sprayer cheap. It is the length of time that it will last and the service and satisfaction to be derived from its use." Buy a good sprayer, good hose and good accessories. Buy equipment having ample tapacity to permit of application of the blossom" or codling meth spray well within the short time usually available for this most important appay. The greater profits resulting from absence of delays for repairs;



Reduce Packing Costs-Increase Peach Profits

To bring top prices, your peaches must be carefully graded, look clean and inviting, and be packed in prime condition

The more of your pack that passes as choice and fancy, the greater your profits. Careless grading, handling or packing causes the loss of many dollars to growers.

This loss can be prevented by the use of machines. Skinner Peach Machinery handles peaches rapidly, carefully, and at a decided saving in packing costs.

Peach Packing MACHINERY

The perishable nature of peaches makes it a dollars-and-cents matter to handle the fruit as carefully and rapidly as possible. There is great gain in using the right types of machines in the packing house. Skinner "Satisfaction Guaranteed" Peach Machinery and packing house equipment have been adopted by peach growers during the past four years, with increasing satisfaction and profit. During this time, some forty peach packing houses have been equipped with Skinner machinery." The line includes: Peach and Apple Sizers, Skinner Apple Polishers, Spiral Apple Polishers, Box Making Machines, Box Conveyors, Handy Trucks and small tools and accessories.

Literature and full information promptly urnished to all who are seeking a better olution of their packing difficulties.

*Upon request, we shall be glad to furnish the names of those nearest you.

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PEACH SIZER

In the sizing of peaches this machine has proved itself reliable, spendy and economical. It is such a time and labor saver that it frequently pays for itself in a single seaso

The use of this sizer simplifies the work of operators—results in better gradie —less handling of perfect peaches—fruit saved from rough usage and bruising—a larger proportion of the pack marketed as choice and fancy.

Sizers on this machine are readily adjustable, and may be regulated to suit different varieties of peaches. Bin sections also may be shortened or lengthened as required. A thoroughly practical machine that will operate to meet daily

Skinner "Satisfaction Guaranteed" Peach Machinery will reduce your packing costs, improve your pack, and increase your profits. Plan now to install one or more Skinner machines to handle your next peach crop. Let us know your needs and we will help you solve your packing problems. All letters receive personal

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Complete outfit assembled on substantial skids with taper ends and can be used as a sled, or operated from motor truck,

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If you are depending on an neighbor or a contract spray out-fit, to do your spraying, at their convenience, or if you are still using the hand pump, that your place has outgrown, you are not only losing the price of a Midget Whale Sprayer, but the real profits on your crop every year.

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NSURING FRUIT SUCCESS

No worthwhile undertaking should be like a leap in the dark when a little study and investigation can insure success.

This is particularly true in growing fruit. An apple orchard should be a profit maker longer than the average lifetime. What you do new before you

Inside Facts of Profitable Fruit Growing

Experienced orchardists and horticulturalists as well as beginners call it "A Wonderful Help to Fruit Growers." Mr. L. C. Beirne of Kentucky wrote us August 30, 1920 as follows:

klet contains easy-to-under-that will help you to most r time and money—how to ite, plant, prune, spray, culti-

e the time and trouble to insure your fu-success. Send for INSIDE FACTS today.

Better Fruit Trees

It is different, as our customers say, for it is written to help you enjoy growing satisfaction. Our claims to your patronage are not based on supplying nursery stock at bargain prices. What we can do for you is best expressed by the following letter:

we no agents but sell direct-from-nursery only

There is only one fruit you can pick the same season you plant—the Everbearing Strawberry. We offer the best variety, the Progressive, 100 plants [enough for the average family] for \$2.10 with manufactor charges to be paid upon arrival.



greater speed, and more efficient applications will easily justify the slightly increased first cost. This holds true whether the sprayer is of a small hand type or the largest power machine manufactured.

Perhaps some difficulty may be en-

a small hand type or the largest power machine manufactured.

Perhaps some difficulty may be encountered in deciding just what size equipment is necessary for any given acreage of orchard. The following suggestions may in that case be of some assistance. The coding mother than a pulse growers in generally suggestions may in that case be of some assistance. The codling moth spray for apple growers, is generally considered to be the most important of any single spray during the season. The time available for its application with best results is also usually the shortest—from five to sight days. Inshortest—from five to eight days. In-clement weather at blossoming time may even reduce this period. Mixing the spray materials, refilling the sprayer tank, and other delays which, sprayer tank, and other delays which, while short individually, when taken in the aggregate will usually absorb from one-fourth to a third of each working day. Figured on the capacity per minute of the sprayer, therefore, the outfit must be capable of delivering sufficient material to cover the orchard in a considerably shorter time than that during which the fruit blossoms are in perfect condition for spraying. For this reason, and also as insurance against entire loss of this application through some unlooked-for breakage in the sprayer, many large breakage in the sprayer, many large orchardists have found two or three small outfits preferable to one very large one. Equipment which will care for the codling moth spray can be considered ample for any of the other applications

applications.

Take Care of the Sprayer

So much for the man who will necessarily purchase new equipment. In the case of the sprayers not needing entire replacement, this time is of equal importance. First of all, the outfit should be taken into a place where it can be worked on conveniently, and a thorough and painstaking examination made of every part. During a recent short trip through one of the important fruit growing sections of the middle west, no less one of the important fruit growing sections of the middle west, no less than two dozen power equipments, representing several thousand dollars, were seen still standing unprotected in the orchards, presumably left just where they happened to be located when the spraying of the last tree was completed. Certainly all of these machines should be placed under cover, the bamboo rods, hose and other equipment taken down from the trees in which they were hung, and the whole outfit made ready for winter—and, incidentally, for the work of next season.

At one of the recent fruit shows a large manufacturer of rubber spray hose was heard to remark that rough treatment and poor storage destroyed fully 80 per cent of the hose which was purchased by fruit growers each season; that the hose that was actually worn out from use was indeed very small compared to the hose that was ruined through carelessness. Careful observation bears out his statement—and shows that the remainder of the equipment also suffers severely from this cause. At one of the recent fruit shows

Cleaning the Pump In order to test out the outfit to

Cleaning the Pump
In order to test out the outfit to best advantage, the solution tank should be filled with clean water and the machine permitted to pump this through the entire pump and pipe line system. A pound of carbonate of soda added to every 10 gallons of this water will assist greatly in removing sediment from the pump and eliminate any further corrosion by the remains of the spraying chemicals.

While the machine is thus being cleaned and washed out, all the working parts can be carefully gone over, cleaned and tightened, or note made of necessary replacements. Examine particularly the bearings, hose, stopcocks, nozzles and other parts which, while usually quite simple in themselves, can cause a lot of expensive delay if they fail during the spraying season and work must be stopped un-

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new parts are received from dealer manufacturer. When the solution has been emptied, drain it and an thoroughly. Remove the nozand stopcocks and oil well; then them away where they will not some lost. Drain the hose and it in a cool, dark place. Light deat both tend to make it deterate more rapidly. Drain every drop of water from pump and the engine water hop. Of course, these parts are genally made especially strong to the stand freezing, but the work reject is small and the added insurce against expensive breakage is gre. Practically all of the more pump and the complete of the more present of the more dealer by which this can be easily depictly accomplished. De not delay placing the order for y parts or accessories that will be dealed. New gaskets, nozale disks, meer packings, etc., cost but little should be renewed frequently, sides these parts, a small stock of an the less commonly required reject.

And now let us go back to our origal statement. The usual attack of
ags and disease will be on hand early
ext season; spraying for their conol is absolutely essential to the
condition of fruit which will be other
an a liability; a small amount of
ork on the sprayer now will save
any dollars next spring. Spraying
term insurance against which the
opications of good chemicals form
be premiums. Efficient spraying
pulpment increases the value of those
remounts and makes the insurance
comportionately larger in direct ratio
the care given it. It will pay,
by it.

HE NEW YORK FRUIT MEETING

the annual meeting of the New in State Horticultural Society, held Rochester, January 12 to 14 was up the usual standard of excellence in not of attendance and addresses, but he a superior display of horticulal products and farm machinery. It is that the superior display of horticulal products and farm machinery. It is that the superior display made the New York Experiment Station Geneva attracted much favorable ention. In this exhibit were several intestes of apples which have been do by the experiment station. It is apples which have been do by the experiment station. It is apples which have been do by the experiment station. It is apple to apple and in its short existence we do an unusual succeas. Through co-operative purchase made of articles as fertilizers, spray malls and feeds, a substantial saving been made for its membership. In bring home to those in attendant the magnitude of New York's coop, Harry Van Buren stated the apple crop of the state in amounted to 55,650,000 bushels, are than 23 per cent of the total ecrop of the United States, and excess of the total production of the west of the Mississippi Riversome 5,100,000 bushels.

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You spray to protect your crop—spending your time, your money and your labor in the hope of the future profit. It is weeks or months before you can measure results.

You may have sprayed in just the right season, you may have used the most scientific methods and gone over each plant or tree with painstaking thoroughness—nevertheless, if your insecticide or fungicide was not the best, all your time, money and labor can be largely wasted.

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Founded in 1839

RASSELLI GRADE Insecticides and Fungicides

Made Berries the Main Crop

By Faank Spaulding, Indiana

HAVE changed my farm from dairying to small fruits, and I like the change. For 19 years I sold milk and during the five years that I milked the cows and delivered the milk I never missed a milking or delivery. During the past 15 years I have had some small fruit as a sort of a side line. But in the milk business, I found that the more I got per quart the less profit I made, as the selling price of milk did not increase in proportion to the raise in the cost of feed for the cows. I finally got tired of being classed with the profiteers, when in fact the business did not much more than pay expenses. some small fruit as a sort of a side line. But in the milk business, I found that the more I got per quart the less profit I made, as the selling price of milk did not increase in proportion to the raise in the cost of feed for the cows. I finally got tired of being classed with the profiteers, when in fact the business did not much more than pay expenses.

Last year I sold all of my cows except one, and the small fruit business no longer is a side line with me, but the main line. About 12 years ago I discard two or three of these but will keep the Aroma and perhaps the Senator Dunlap. The variety that does well for me might not do as wel

ways get my new plants from a nursery instead of plants of my own growing. I have tried many different varieties of strawberries and have reduced my list down to four kinds, the Aroma, Senator Dunlap, Pride of Michigan and Bubach. I am going to discard two or three of these but will keen the Aroma and perhaps the Senator



A well tilled strawberry field like this produces satisfaction as well as profit

A well tilled strawberry field like this produces eatisfaction as well as profites to ut 300 peach trees, 17 feet apart each way. Between the rows I set 1,000 blackcap raspberries. I got one good crop of raspberries and two partial crops when they were struck with blight and I pulled them all up. From the 300 peach trees I got one-third of a crop the spring of the sixth year, and the peach tree borer and shothole beetle got in the trees to such an extent they were practically all killed. I then pulled them up root and branch, burned them and reset 200 more peach trees.

and branch, burned them and reset 200 more peach trees.

This orchard soon went the route of the first. I thought then, and do yet, that 12 years of my life devoted to peaches without profit was a plenty. I want to state, however, that I did my part. I sprayed and cultivated in season and out of season. When people would come to see me, Mrs. Spaulding would tell them they would find me over in the peach orchard. I named the farm "Peach Blow Farm," gave a dollar to have it recorded and now I can't change it even if I would.

Then Came the Berries

Then Came the Berries
Then I set two rows of strawberries between each row of peach trees, or where the trees did stand, and a row

between each row of peach trees, or where the trees did stand, and a row of blackberries in the tree row. I am getting pay for my time and labor now, but I work more than eight hours a day, and it don't net me a dollar an hour either. But I am satisfied and happy. Every year we have ripe berries on Peach Blow Farm from about June I until it freezes up.

In April, 1919, I set out 1,000 everbearing strawberries, kept the bloom picked off until July and had ripe berries until cold freezing weather in the fall. Last spring I picked in this patch every time I did in the standard varieties and got just as many and as fine berries in proportion to the amount, of ground as on the summer bearing varieties.

I have three patches besides the everbearers. I plow up a patch every spring and reset, or set out a new patch on ground that has never had strawberries on it. This gives me two bearing beds all of the time. I al-

Made a Runner Cutter

If your back gives out cutting runners, hunt up an old drill disk in some junk pile. I took an old lawn mower handle, put an iron strap on each side of the handle at the lower end, run a bolt through the iron on one side, the through the hole in the disk and then through the other strap, and there I had a rolling runner cutter I can push along and can cut the runners as fast as I want to walk.

I am a crank on cultivating. It retains moisture and kills the weeds before they are up. I do love to he weeds where there are none! When the ground will bear up a horse and wagon and the cold comes to stay, I fill the four-foot space with manure three or four inches deep. Later on I put some straw on the berry plants, but not enough to smother them. In the spring the new plants will come up through the straw while the heavy coat of manure in the middle will keep down the weeds.

Small fruit will never be sold again as cheaply as it was a few years ago. The past season was a banner year for fruit of all kinds. Price seemed

as cheaply as it was a few years ago. The past season was a banner year for fruit of all kinds. Price seemed to cut no figure. There seemed to be no end to the demand. Shorter hours means less production and less production means more money. I have bought berry baskets for \$2.25 per 1,000. Recently I bought 2,000 for use next season and paid \$5.50, although another firm asked \$8 per thousand. I have bought crates for \$9 per 100, but now they cost \$18 to \$30 for the same number. To get the berries picked this year I had to puffive cents a quart or 80 cents for a 16-quart crate.

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old again ears ago. ner year

The Delayed Dormant Spray

By C. L. Burkholder, Indiana Experiment Station

THE dormant spray of limesulphur can be applied any time
while the leaves are off the tree.
This spray is primarily for the control
of scale. Liquid lime-sulphur is ordinarily used at the rate of one gallon
to eight of water, The next spray
goes on after the flower buds have
started to open and the individual buds
in the cluster have begun to separate.
It is commonly known as the "cluster
bud," "pink," or "first summer" spray.
Summer strength lime-sulphur and ar-



Apple Buds Just Right for Delayed
Dormant Spray

ate of lead are used for this spray sisting of 1½ gallons of liquid sulphur with 1½ pounds of pow-d arsenate of lead to 50 gallons of

The so-called "delayed dormant" pray is a substitute for the dormant and "pink" spray, and is made with liquid lime-sulphur, one gallon to eight gallons of water, with 1½ pounds of powdered arsenate of lead. Where dry lime-sulphur is used, 25 pounds should be mixed with 50 gallons of water. Nicotine sulphate at the rate of one-half pint to 50 gallons of spray should be used when aphids are present.

When to Apply

The "delayed dormant" spray is applied just as the flower buds are showing pink at the tips, but before they



To Late for Delayed Dormant Spray

open up and expose the stems of the individual flowers in each bud. An accompanying illustration shows apple buds at just the right stage for the application of the "delayed dormant"

upplication of the "delayed dormant" pray.

Usually there are only a very few days when the buds are at the proper stage for this spray. It is therefore a rather risky spray to depend on, as a few days of warm, rainy weather will advance the buds to a point where it is necessary to use the summer strength of lime-sulphur. If the orchard is infested with scale it is sever a good policy to depend on the delayed dormant" spray. Leaflet number 49 of the Purdue Extension Department outlines the spray shedule for plums, cherries, grapes and pears; leaflet number 80 gives the sple spray program. These leaflets may be obtained from the horticularal division, Purdue Extension Department, Lafayette, Ind.



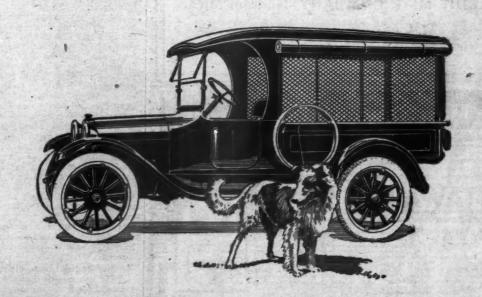
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Haulage costs are consistently low, and repair costs for the car itself are almost unheard of

DODGE BROTHERS, DETROIT



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There's an easy way to get rid of them. It save the moisture—Makes your vegetables GROW. BARKER Weeder, Malcher and Cult vaio 3 Cardge Tools in 1



PAINT WITHOUT OIL

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A. L. Rice, a prominent manufactures of Adams. N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdrpaint. Stomes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface wood, stone or brick, apreads and looks like oil paint and costs about one-fourth as much.

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GUARANTEED to Handle Wet, Dry or Lumpy Lime (in any form), Cominercial

III. SPREADS 161 FEET

How to Make Spray Mixtures

In the spray schedule which appears on another page the spray materials there mentioned are to be made ac-cording to the following formulas:

1. Bordeaux Mixture

Copper sulphate (bluestone) 4 pounds Quicklime (not air slaked)... 4 pounds Water to make............. 50 gallons

Using only wooden or earthen vessels, dissolve the bluestone in a few gallons of hot water, adding water to make up 25 gallons. Slake the lime carefully, permitting neither "drowning" nor "burning" and after all action has ceased, make up to 25 gallons. Pour these dilute solutions together in mixing barrel at the same time, mixing barrel at the same time, through a strainer, stirring vigorously. Use the same day. Stock solutions of lime and bluestone may be made up and kept on hand, in which one pound of lime or bluestone respectively will be dissolved in one gallon of water.

2. Commercial Lime-Sulphur Solution

Lime-sulphur may be bought as commercial concentrated stock solution, which is used one part to eight parts of water for winter strength, and one part to 40 parts for summer strength. Where a small amount of spraying is done it is more convenient to buy the commercial material.

Homemade Lime-Sulphur Solution Orchardists whose orchards require the use of large quantities of lime-sulphur solution often find it an advantage to make up their own concentrated stock solution. This may be done according to the following formula from the Illinois Experiment

Stonelime, best grade.....50 pounds Sulphur100 pounds Water to make, when boiling

In a large kettle place about 15 gallons of water, bring to a boil, dump in the lime. Add the sulphur and mix thoroughly, adding hot water as necessary to prevent the mixture from burning as the lime slakes. When the lime has slaked and the sulphur is well mixed, add hot water to bring total volume up to a little more than 66 gallons, to allow for evaporation. Boil continuously for 30 to 45 minutes, adding cold water if boiling-over occurs. When finished the color may vary from orange to chocolate. Test material by taking some out in a dipper, then pouring back slowly. If no sulphur globules remain, it has cooked enough. Remove from fire at once. A small amount of impurities or sludge in bottom of kettle does not interfere with use in spraying. This stock solution will keep through the season. Dilutions are made one part to four parts water for winter strength, and one part to 19 parts water for summer strength spray. Arsenate of lead and nicotine sulphate may be added at the usual rate when needed.

4. Self-boiled Lime-Sulphur Solution In a large kettle place about 15 gal-

needed.

4. Self-boiled Lime-Sulphur Solution

This solution is used for the control of brown rot on peaches and, unlike most other sprays, it does not injure the peach foliage. It is made as

Quick lime, best grade..... pounds Sulphur, finely powdered.... pounds Water, to make....... 50 gallons

This is the standard poison for chewing insects and may be obtained on the market in the form of either a paste or a powder. The paste form is used at the rate of two pounds to 50 gallons of the spraying solution, while the powdered form is used at the rate of one pound to 50 gallons of (Continued on page 27)

MAGIC" BRAND

QUALITY FERTILIZER
All that the name implies
Pure steamed bone and sheep manure

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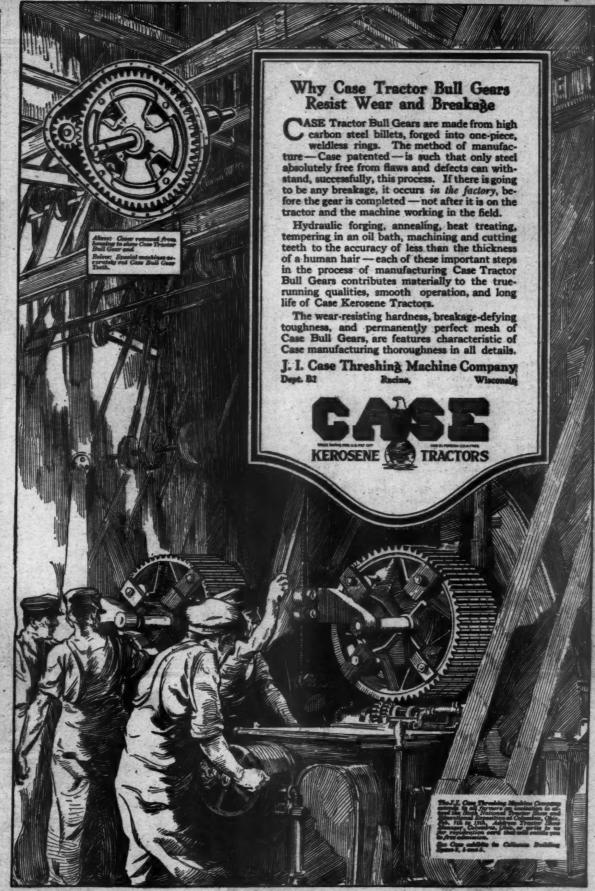
(Continued from page 5)

ching the codling moth larve under real conditions. If mosquito netting wire netting is placed over the und at the base of the trees the reging of the moth from the soil be carefully checked. It has been aby watching these conditions in hington orchards for many years the time in a given location does vary much from one year to an-

vary much from one year to and a spray was timed, not for the arliest worms, but so as to come ahead of the big bulk of the first a worms. The first brood worms out over a period of about 35 if the very first worms are by to enter the apples around May, the brood will not reach the peak me about June 15th. Under these likens we sprayed between June and June 5th. The calyx spray rand good protection up until this and if any of the early worms put the first cover spray, they taken care of by the thinning. same degree of thoroughness was in the application of the first rapray. If the cover spray had put on ahead of the very earliest me it would have been nearly extended appeared. The rod was preferred the first cover spray, and after it was optional, although some used the gun for all cover sprays and to get good results when proposed, but the guns can be more abused than rods and work

Proper Thinning

inning of the fruit to one on a spur and from six to ten inches it is an economical operation for grower who aims to produce high a fruit, but with any pest control it is not only economical, but it beolutely necessary, and the best its can not be obtained unless it is. The trees should be carefully over and the fruit carefully ned, removing all ill-shaped, dened or injured specimens, and by means all fruit showing evidence orm infestation. Very few growthin sufficiently the first time, and second thinning is done later in eason and after the second cover of, there should be but few worms at harvest time. The thinning done between June 15th and July all picked-off fruit being burned to be a second cover of the worst infested orchards a ad cover spray was applied about time the brood was at its peak, or the past the peak to take care of stragglers, which in badly interested or the second decame about the last of July. Was determined by the breeding for bands around the trees. From time on there generally is but distinction between broods. In hatchings may be continuous up harvest time or as long as ther conditions are favorable, as ot days and when the temperature ove 60 degrees at night. If there evidence of late worms, another y was applied about August 20th. In results of this campaign produce a crop showing an average of than five per cent of worms in a senumber of orchards totalling acres, that had the previous sealols, showed an average of more 1918, showed an average of more 1920, there were nine comity units formed in one valley, several in others, all giving proionate results. In some of the ormal which had showed from 20 to the cent worms two years previous did not show one per cent in the crop. Hence we believe that in pet control work, especially the methe infestation to a minimum, or tically eradication, but thoroughmeasures efficiency.









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TODAY, after six years of remarkable performance in every fruit growing section, Fruit-Fog is acknowledged the most thorough form of spray. Its record of big fruit yields stands unmatched and supreme. It is everywhere recognized as a phenomenal success.

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Send the coupon for our FREE Book and get all the facts about the Hayes System of Fruit-Fog Spraying. Learn how it is produced by Hayes 300 pounds high pressure and the scientific Hayes nozzle. How Hayes Power Sprayers are scientifically made to give endurance and greatest efficiency under high pressure. And why the famous Fairbanks-Morse "Z" Engine insures reliable engine service.

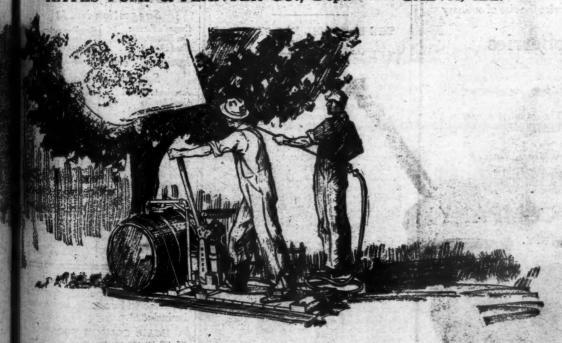
Learn also how Hayes Hand Sprayers kill the bugs, lice and mites—make your potatoes grow, your hogs put on money-making weight, and increase egg production from your poultry.

These amazing results have been proved again and again. Thousands of Hayes Sprayer users all over America have had the same surprising experience. The results on your farm will astound you.

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Tell us what you want your sprayer to do, and we will tell you which of the Fifty Styles of Hayes Sprayers is best suited to your needs, and its price. We will also send the New Book of Hayes Sprayers and Valuable Spraying Guide FREE.

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WO things are absolutely necessary when best results are to to be obtained by pruning.

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Pexto Pruning Shears are so designed that they cut easily, making a smooth, clean cut and take the work out of pruning, making it real pleasure.

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Juicy, red raspberries, sweet and delicious, twice the size of ordinary spherries. These are

Syracuse Red Raspberries

The plants are hardy, northern grown. They weather the hardest winters. The fruiting season is long. Berries are bright red, abundant and the largest yet produced. SYRACUSE Red Raspberries add value to any garden.

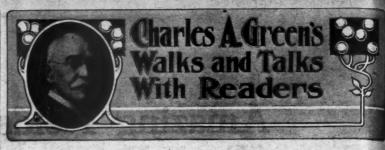
Other new fruits of rare quality are CACO, a wonderful new red grape, ROCHESTER Peach and HONEYSWEET, a new black-cap

Everything for Garden and Orchard - Trees, Plants, Vines, Roses

Finest quality trees grown on whole roots, TRUE TO NAME. The best varieties of apple, pear, peach, cherry, nut and shade trees, strawberry plants, gooseberry, black-send for our free catalogue today.

GREEN'S NURSERY COMPANY





Farming a Busy Life

THOSE who have had large or long experience with farming, and fruit growing is a branch of farming, will agree with me when I say that farmers and fruit growers lead busy lives. It is largely the poet and the city man who lacks experience who think that life on the farm is largely a holiday. The land worker is driven by the seasons, which are some times early and at other times late. He is delayed by rains or by the slow approach of spring, or on the other hand by the rapid advance of spring. He is urged to do his best when haying commences, which is followed quickly by the activity of the harvest field. Such work, and the work necessary in securing crops of fruit, cannot be postponed. How discouraging then in gathering crops to have successive rains day after day which prevent outdoor work. You may be paying high wages for labor and have nothing for the laborers to do in rainy weather.

Some people have an idea that winter is a season of rest with the farmers but I have not found it so. There is always something necessary to be done to every house and every home

ers but I have not found it so. There is always something necessary to be done to every house and every home on the continent. There are also changes and repairs necessary in the outbuildings. What a drain there is upon the farmer and how much time is occupied by repairing fences broken down by the wind or thrust out of the ground by heaving of frost. There are always rocks to dig out and stumps and low lands to drain and manure piles to draw and spread.

THE BEST SOIL FOR STRAW-BERRIES

BERRIES

WHAT a vast difference there is in soils even on the same farm or even on the same field. Some soils, in order to be in prime condition, must be stirred after every heavy rain. If not stirred with the hoe or cultivator it is liable to harden so that strawberry plants do not thrive or do not develop large berries. For ease of culture and inexpensive culture a sandy soil is preferable. The objection to sandy soil is that it easily parts with its fertility and needs more frequent fertilizing than heavier soils. My experience is that sandy soils do not admit winter heaving so often as

experience is that sandy soils do not admit winter heaving so often as clayey soil, which parts with its water more slowly.

I have succeeded in growing big crops of strawberries on almost every kind of soil except hard clay. The strawberry is not fickle of its location on the map, north or south, east or west. I have succeeded in growing strawberries on muck land, but such land is most often on low land subject to late spring frosts, which is a serious drawback. Muck lands can often be irrigated. My experience is that successful irrigation calls for experienced men to manage it. It is about as bad to get too much water as too little. I have found the fruit on irrigated muck land much softer than that grown on the higher elevations.

PRESS THE SOIL AFTER PLANTING

THERE are many people who do not understand that after planting a vine, shrub or tree, they

should tamp the soil nearly as firmly as though they were setting a fence post. One reason why plants and trees perish is that the planter does not understand that this treading of the soil after the tree or plant is planted is absolutely essential, particularly is this the case with strawberry plants.

After the soil is made very find by treading, fresh earth should be drawn towards the plants and len loose as a mulch. Here is the advis of a nurseryman of 40 years' experience. If the sod has not been firmly pressed with the feet it may not be too late to do this work now. Never use manure in planting except on the surface.

Magazines Offered at Bargain Prices

Suggestion No. 11

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rizes; con and culls. The sld apples alone that no fore they and of the slitt which operall onto opening of the slitt.

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R

The Latest Thing in Packing Plants

AN ORIGINAL system for sorting apples has been worked out and put into successful operation in the new \$120,000 plant of the spokane Valley Growers' Union, an incorporated, co-operative community sociation of fruit growers on the irmsted tracts lying just outside the dity of Spokane in the beautiful Spokane Valley.

The capacity of the plant is 3,500 packed boxes a day and this year the liain began the apple harvest of 1920 by investing \$65,000 in apple boxes and \$30,000 in paper which has doubled in price since the purchase. It has an hand \$5,000 in spraying materials. Apple receipts last season totalled \$50,000 and this year the estimate is \$600,000, virtually all of which will be divided among the 340 members.

The aim of the orchardists in enlarging the plant and installing new mechinery to redouble the dheck on

ing the plant and installing new chinery to redouble the check on ssification, was to establish an out-ading brand that would eventually

anding brand that would eventually minimal national recognition.

One of the difficulties encountered after the ordinary system of hauling as bruised and stem-punctured fruit. In this bruised and stem-punctured fruit od condition only to be found decive in eastern apple centers. In a effort to attain perfection, the imager, Edward Pierce, evolved his majoring machinery and handling ratem.

The orchardist delivers apples in ones at the east end of the building of the whole method of handling on this on is a "conveyor system." addess and innumerable moving belts are on every operation and almost liminate lifting and handling.

How the Fruit Moves
The box from the orchard is placed a broad moving belt elevator which wries it to the packing room on the bird floor of the building, unless the clera are not ready for the congenent, in which case it is stored the basement. Each grower's fruit kept separate and sorted and packed a unit. This is made practicable the couracy and efficiency of the large system.

by the accuracy and efficiency of the larce system.

On the incline belt the box enters the long sorting room and may be removed at any of the cross sections, where sorters work, and assembled within their reach. The sorter lifts the apples carefully from the box and laces them on the belt in the sorting roughs. This entirely eliminates matures and bruises when the fruit handled under the method of dumpfs and piling. The sorting apparatus maists of 10 small belts moving from a sorter, in troughs, to larger belts maning at right angles the entire magth of the room. The 10 smaller roughs allow for extra grades in three sizes; fancy grades in three less; common grade in three sizes, ad culls.

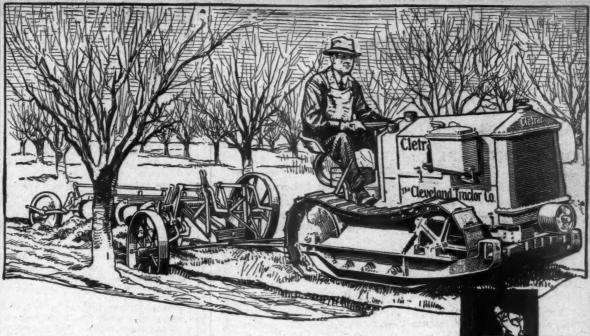
The slow moving belts carry the

mes; common grade in three sizes, and culls.

The slow moving belts carry the apples along in full sight of the sorter of that mistakes can be rectified before they have gone too far. At the and of the troughs, the apples drop to a little trap door of light pine which opens and allows the apple to all onto the main conveyors. The pening of this little door registers in a counting machine installed at the and of each trough. When the sorter tarts one grower's consignment he aless readings on the counting machine and at the finish again takes hem; in this way the grower knows as how many of each grade he delivered. If the farmer wants his culls hey are returned to the original tree, otherwise they are diverted tong the main conveyor and sacked sold to the vinegar works.

How the Packers Work

How the Packers Work in leaving the sorter-troughs, passed through the counting the apples pass along the main of the packers' stalls. Each ap-



Cletrac is First in the Orchards

-it "gets the jump" when the season's late

LETRAC is first in the orchards Cevery year. Even a late, wet Spring doesn't bother the Cletrac fruit grower. He gets the plowing and discing cleaned up early regardless of weather. And he's ready to seed his cover crop during those few days when conditions are just right for planting.

The compact, smooth bodied Cletrac works in close to the trees without harm to bark or branches. Its suregripping tank-type tracks carry it easily over hilly land without losing power through slipping or digging in. It leaves the earth loose and mellow because the broad tracks don't pack the fresh-turned soil.

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Our dealer is ready to make spring demonstrations. He will also explain our LIBERAL DEFERRED PAY-MENT PLAN. If you don't know our dealer, write us direct.

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OSES of NEW CASTLE



EVERGREENS!

ple rides in state on the moving belt and has no oportunity to come in contact with other apples or to collect bruises during the journey. From the main conveyors, the apples are diverted to packers according to grade and size. For example: one group of three packers gets the extra fancy fruit and the first in line packs the large size; the next packs the medium apple; and the third packs the small grade. In order to make the remuneration fair, for the packers work by piece work, the operators take turn about in handling the small fruit.

Even here, the apples are not allowed to pile up but are carried around the packer on a continuous belt so

the packer on a continuous belt so that an apple missed the first time is recovered on the second round. The packer lifts the apple from the belt, wraps it in paper and places it in the box. Delicious, Rome Beauty, and Winter Bananas are expected to run 88 or less to the box; Jonathans 125 or less; others 175 or less. The standard for popular consumption in the ard for popular consumption in the United States is 96 to 125 to the box; but for export the sizes run 128 to 200 a box.

Having been packed, the boxes travel along conveyors to the machine press where they are nailed. Now the boxes take an exciting and novel trip. To reach the second floor, where they are labeled, the boxes are sent out through metal chutes which circle outside the metal chutes which circle outside the building and open again on the second floor. As there are 10 belts there are 10 chutes. Loading boxes in cars is a task which falls to a selected group of employees. The boxes ride out to the cars on conveyors and are ready for eastern apple centers.

Building Modern Throughout

Suburban electric trains serving the Spokane Valley from the city of Spokane pass the plant which is located on the Chicago, Milwaukee & St. Paul Railway. The building is attractive and modern in every respect with all machinery electrically driven. Employees' rest rooms, modern offices good ventilation and light and exacting cleanliness make for satisfied workers. The long rows of packers and sorters busily at work form a striking picture and a constant stream of visitors winds through the plant. Buyers from England, growers from California, efficiency experts, newspaper men and just plain sight-seers are in evidence among the visitors; but all admit that the efficiency methods in practice and the ease with which the gading is done gives a new slant on the Suburban electric trains serving the gading is done gives a new slant on the apple industry as well as a greater appreciation of the advantages to be obtained by the grower in conducting co-operative marketing organizations.

APPLE SYRUP

APPLE SYRUP

And now we are about to pass the apple syrup. Genuine, real syrup, not made from sugar cane or sugar beets, but from apples grown right here in Oregon. J. O. Holt, packing manager of the Oregon Growers' Co-operative Association with headquarters at Eugene, announces that the chemist at the Eugene plant is putting out an apple syrup that is likely to be the real thing.

Heretofore, in all the apple syrups produced, there was an acid that rather spoiled the effect. By a chemical process, this acid has been removed and now the syrup made from apples is very likely, within another season, to be found on every breakfast table. By the new process, the apple syrup is clarified, the acid removed and then it is almost as sweet as the ordinary cane or beet syrup without the addition of any sugar. Mr. Holt says there is also great possibilities in the use of the new syrup for cooking purposes besides table use.

The Eugene plant of the Association is now making this syrup and it will be supplied to the trade this winter to give it a thorough test. It requires seven or eight gallons of cider to make one gallon of syrup.



Cover Crops Increase Orchard Profits

ship.

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How to Make Spray Mixtures

spray. It is well to mix the arsenate of lead with a small amount of water before putting in the spray tank.

6. Cold-Stirred Oil Emulsion

Mix the soap and water, then very slowly and gradually add the oil in small quantities at a time, meanwhile stirring the mixture vigorously in order to thoroughly mix the ingredients. Test frequently by adding a little of the mixture to a cup of soft water. If no oil floats, the mixture is perfect, otherwise, add more soap and stiragain. The above quantity is sufficient for 200 gallons of spraying solution, and when thus diluted contains one per cent of oil.

7. Boiled Emulsion
Paraffin oil 2 gallons

Paraffin oil ... 2 gations
Fish oil soap ... 2 gallons
Water ... 1 gallon

Put all of these into a vessel that will stand fire, and heat to the boiling point. While still very hot, pump the material through a bucket spray pump into another vessel and then back again to form a perfect emulsion. The mixture then is ready for use. Dilute with 200 gallons of water. Potash fish oil soaps are the best to use in making oil emulsions.

2. Distillate Oil Emulsion

8. Distillate Oil Emulsion Boiling water 12 gallons Fish oll soap 30 pounds Distillate oil, 30 to 34 degrees 20 gallons

Dissolve the soap in the hot water, and while stirring vigorously add the distillate slowly. Then pump under high pressure through spray nozzles into storage vessels. For use, dilute 2% gallons of this stock solution with 50 gallons of water, for thrips. When diluting, put the stock solution in the spray tank and agitate while adding the water. Nicotine should not be added until dilution is complete.

added until dilution is complete.

About Commercial Spray Mixtures
There is more or less difficulty in
mixing spray materials at home, and
the work always is mussy. But in
recent years practically all kinds of
spray materials are to be obtained on
the market in a concentrated form,
needing only the addition of water to
make them ready for use. In many
instances such materials are more
economical to use than to attempt the
home manufacture from raw materials.

of the oil sprays, there are many brands. Some of them, such as "scalecide" have come into extensive use in all parts of the country, while others, particularly those made from heavy oils, and chiefly of use in spraying citrus fruits, are to be obtained in those localities where they are most extensively used. In Florida, the Gulf coast and California, highly efficient oil sprays may be obtained in commercial forms.

For the person who needs but a small quantity of Bordeaux mixture, or the commercial grower who is not equipped to make this highly efficient fungicide in a large way, there are a number of commercial brands of this spray material in both paste and powder forms.

Tobacco preparations, for use in controlling certain very troublesome

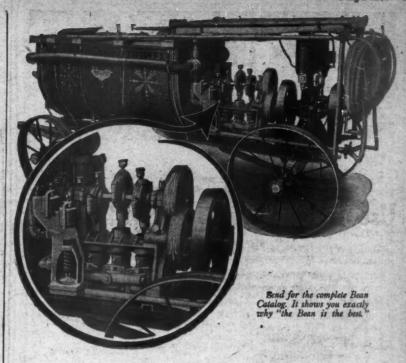
powder forms.

Tobacco preparations, for use in controlling certain very troublesome sucking insects, are much more satisfactory when obtained in commercial form than when made at home. The commercial article is of uniform strength, and much more dependable than that which is made at home.

Ask for Information

Ask for Information

We will be very glad to hear from any reader of AMERICAN FRUIT GROWER about his spraying problems, and the kind of spray materials to use. We will be especially glad to hear from commercial growers who have used, or who are considering the use of commercially made spray mixtures. Let us help you with your problems.



The Heart of the Sprayer is the Pump!

Your sprayer is just as good as the pump that's on it—and no better! Every drop of liquid that goes onto the trees is taken from the tank and delivered to the nozzles at tremendous pressure - by the

There are 36 years of experience built into every Bean Spray Pump. Bean Porcelain-lined Cylinders, the Bean Pressure Regulator, Bean Threadless Ball Valves, Bean Eccentrics, Bean Cup-shaped Plungers [which require no stuffing boxes] - these and the many other Bean advantages are not the result of a day! They represent the work of years!

Here and there you will see a Bean feature copied, but in no other sprayer will you find all of these superiorities built into a single pump -for most of the vital improvements are patented and protected against infringements.

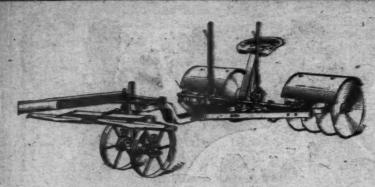
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Tractors, Trucks and Engines

By FRANK E. GOODWIN Department Editor

ABOUT CARBON REMOVERS

A subscriber says: "I have seen ads in different papers telling of how some patent carbon remover removes the carbon from auto cylinders and cures about 20 per cent of engine troubles. What do you know about these carbon removers?"

Here is where

Here is where caution must be ex-encised. There are a number of ad-vertised products on the market for removing carbon from motor cylin-ders, and I am afraid that not nearly all of them are "what the doctor or dered."

Motor experts agree that one should put nothing into the cylinder bore of a motor for fear of damaging the polished walls of the engine. In this I agree most heartily, with the single exception that one absolutely knows that it can do no damage. Mechanics have a selfish motive in not recommending carbon removers, because they make a good profit in burning out the carbon with an acetylene torch, and I am not sure but this does as much damage as a good, well recommended carbon remover.

For more thun five 'years I have been using a certain advertised earbon remover (name on request) with excellent results. During that time I

remover (name on request) with excellent results. During that time I have not found it necessary to have any cylinder burned out, or scraped, and whenever it has been found necessary to take down the motor, the cylinders, pistons, valves, and cylinder heads have been found to be as clean and bright as when new. The way I use this is to put an ounce of the carbon remover into each cylinder through the pet cocks while the motor is still quite warm. Then I turn the motor over with the starter several times to mix it with the carbon, and then let the motor stand until morning. Then it should be run at least then let the motor stand until morning. Then it should be run at least 10 miles on the road, or its equivalent with the motor idling, at a fair rate of speed, with the muffler cut-out wide open. The carbon is thus blown through the exhaust and the motor is left well cleaned. This I repeat about every 200 miles for an automobile, or 150 miles for a truck in the case of a tractor, using kerosene as fuel, the carbon remover should be put in about every 48 hours of actual work.

If any reader is afraid to use these

of actual work.

If any reader is afraid to use these patent solutions, he will find a very acceptable substitute in kerosene oif of the grade used for illuminating purposes. On putting the motor away for the night, or when it can stand for several hours without using, and with the motor as warm as the hand can bear the heat, open the cylinder a tablespoonful of kerosene. Then turn the motor over, several times—without the ignition connected of course—and let it stand for 10 or 12 hours. Then run the motor for four or five miles, or its equivalent, and the carbon will be well cleaned out.

Little Knowledge Dangerous

In these days of low grade motor fuels carbon is the source of a great many motor troubles. Unless the carburetor is so nicely adjusted that every bit of fuel is completely broken up and vaporized, the particles of raw fuel that escape the mixer are fruitful sources of carbon. This soon accumulates on the spark plugs, valve heads and around the edges of the pistoms. Then the ignition begins missing, and this adds to the amoyance. The motor heats up quickly power decreases, and finally the machine is ready for the repair shop.

No operator, unless he is a skilled mechanic, should attempt to scrape the pistons, cylinder walls, valves, and other parts where carbon accumulates.

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The least little scratch becomes a "score" and compression is lost in consequence. Anyone, if he has the least bit of sense, can clean his spark plugs, and put them into good firing condition, but that is as far as the condition, but that is as far as the novice should go. Many a motor has had to go to the repair shop to be rebored, and fitted with new pistons and rings, because of a slip of the knife in the hands of an inexperienced man. In making such cures as removing carbon with a steel instrument, or emery cloth or carborundum, a little knowledge is a dangerous thing.

MORE ON ANTI-FREEZING

A. D. S., Ohio, asks—"I have heard of people using coal oil in radiators of automobiles in place of water, so they would not have to drain them in cold weather. Is it practical? Any objections? jections ?

Briefly I would answer this question in the manner which the wit advised the man about to be married: "Don't."

"Don't."

The writer has known men to use kerosene as an anti-freezing compound. He has also known men to light the fire with gasoline and not have the coroner called. He has, as well, heard of men who have drank wood alcohol, and lived to brag about it. But such experiences do not prove that the practice can be recommended as being safe and sane.

Ever since automobiles, and later tractors and trucks, were invented, much time and energy has been devoted to the study of cooling solutions which would be cheap, clean, and unfreezable. To this time no acceptable substitute for alcohol has been discovered, although the motor magazines

freezable. To this time no acceptable substitute for alcohol has been discovered, although the motor magazines are liberally supplied with advertised "stuff," much of which is worthless, and some actually injurious to motors.

Ethyl (grain) alcohol, which has been denatured of course, to which has been added glycerine and water in different proportions, is the only safe anti-freeze solution so far found which can be unhesitatingly recommended. Before determining what the proportions of the ingredients shall be, the operator should ascertain, if possible, what the lowest temperature is he will likely encounter. In the north this will likely encounter. In the north this will likely be 40 degrees below zero. In the middle west the thermometer is not likely to drop lower than 10 degrees below, while in a line drawn from the northern part of North Carolina to a point about Austin, Texas, the temperature will seldem go below zero.

Having learned what the expected lowest temperature will be the operator will prepare a solution of ethyl alcohol, glycerine and water in the following proportions: 15 degrees above zero, 12 parts alcohol, 8 parts glycerine and 80 parts water. Below that follow this table:

Parts Parts Parts
Temp. Alcohol Glycerine Water

Temp.	Parts Alcohol	Parts Glycerine	Parts Water	
Zero	20	12	68	
10 below	22	14	64	
15 below	25	15	60	
25 below	30	20	50	
40 below	. 45	25	80	

Now drain the cooling system and clean it well with baking soda and warm water, about one pound of soda to a gallon of water. Run the engine for 15 minutes so that every part of the water jacket and radiator is well washed out. Then drain and fill with the cooling anti-freeze solution.

The glycerine is added so that the alcohol will evaporate but little. The glycerine will remain in the radiator unimpared until it is drained. When it is necessary to replace some of the solution, add no glycerine but a solution consisting of alcohol 25 parts and water 75 parts. In case one does not care to use glycerine the alcohol in the solution should equal the alcohol and glycerine recommended above. Glycerine will rot the rubber pipe connecting the radiator and motor, but this can be replaced for a few cents,



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The watch that keeps accurate time in the movement and jolting of railroading is the very timekeeper for the farm. Ask your jeweler to show you a Hamilton. Prices range from \$40 to \$200; movements alone, \$22 (in Canada, \$24) and up. Send for "The Timekeeper," an interesting booklet about the manufacture and care of fine watches. The different Hamiltons are illustrated,

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Progressive Poultry Raising

William A. Lippincott neas Agricultural College Copyright, Armour & Co.

FARM without poultry is unusual. In early days a home without it was just as much so. With the growth of the towns and cities, the development of the refrigerator car and of the egg-packing industry, with its cold storage facilities, the town and city dwellers came to depend upon the people of the open country for the production of poultry and eggs.

and eggs.

In the beginning the farmer or his wife simply sold the surplus from the flock which supplied the family needs. This is still largely true, though the size of the flock has grown and the surplus has increased as the prices for poultry products has risen. Fowls have received increasing recognition as a means of marketing waste grains, grasshoppers and other insects. Unfortunately for consumptive demand the production of poultry and eggs is largely seasonal. The bulk of the year's lay comes between the first of February and the first of August in most states. The poultry erop comes to market between the first of August and the holidays, yet people need these highly perishable products the year round. It is artificial refrigeration which makes it possible for the farmer to sell eggs in April and live poultry in November at prices that are profitable, and for city folks to buy eggs in December and broilers in February at prices which are not prohibitive. The cold storage houses are the cellars of the cities.

The outlet for poultry products has from the first been a steadily increasing one, and the need today is for more, larger, and better farm flocks, shelter in better houses, fed on better rations and given better care. It is the farmers' need as well as the consumers', for the general farm that is understecked on poultry is not fully efficient, because it is failing to utilize and realize on its by-products. Worms, weed seeds and windfalls can command good prices when transformed into poultry and eggs.

Kind of Stock for the Farm Except in the case of the strictly meat birds such as the turkey, duck (with the possible exception of the Rumer) and goose, the income from the eggs sold constitutes about two-thirds of the income for poultry products, the carcasses sold, whether alive or dressed, furnishing the other one-third. The egg is undoubtedly the more profitable of the two products and the farm flock should always be good layers. Having in mind his own home needs, however, the farmer usually wishes

Breeds and Classes

Breeds and Classes

There are four classes of chickens that have found favor on general farms. These are the Asiatics which include the Brahmas, Cochins and Langshans; the Mediterraneans which include the Leghorns, Minorcas, Andalusians, Anconas and Spanish; the Americans which include the Plymouth Rocks, Wyandottes, Rhode Island Reds, Dominiques, Buckeyes, and the Havas, and the English which include the Orpingtons, Dorkings, Sussex, Cornish and Redcaps.

The Asiatic breeds have not been as popular for general farm use of late

The Asiatic breeds have not been as popular for general farm use of late as they formerly were. They are for the most part large, slow-maturing birds which lay only indifferently and are greatly given to broodiness. The loose, heavy feathers also furnish an ideal refuge for lice and render it more difficult to keep the flock free from parasites.

parasites.

SIMPLE MI **MAKES HENS**

By W. S. Burgess.

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successful poultryman.

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mouth Rocks, Wyandottes, and Rhode Island Reds are found in farm flocks with frequency. Members of these breeds are intermediate in size between the Asiatics and the Mediterraneans, giving a carcass of desirable size and quality for marketing or for home use. While the average egg production of these breeds is not so high as in the case of the Leghorns, there are strains and families which are great producers. At the Vineland, N. J., contest a White Plymouth Rock laid 301 eggs during her first laying year and a Barred Plymouth Rock accomplished the feat of producing 501 eggs in two years, these being the highest one-year and two-year records at the contest. There appears to be no reason why a satisfactory egg production and a sizable carcass should not be found in the same flock.

Among the English breeds the Orpington is the only one extensively used for the farm flocks. The Orpingtons are quite similar in general characteristics to the American breeds, being a little heavier than the Plymouth Rocks and a little slower in maturing. Like the Plymouth Rocks, they are fair layers of rather light brown eggs.

The Mediterranean breeds are small-

brown eggs.

The Mediterranean breeds are small-The Mediterranean breeds are smaller than the English, American and Asiatic breeds and much more active than the latter. Taking the White Leghorn as representative of the class (this variety probably being bred in larger numbers than all the other Mediterraneans combined), the average egg production is larger than for any other class. The Leghorn, however, finds its popularity on specialty farms where eggs are the main cash crop, rather than on general farms. The Leghorn has not proved popular as a general farm fowl largely for two reasons. The first is that as usually bred, they furnish a rather small carreasons. The first is that as usually bred, they furnish a rather small carcass for table use and second, they are so flighty as to be difficult of control. It is possible, however, to breed Leghorns of good size which are fairly desirable for table use. The fact that they lay a pure white egg which is in demand in certain extreme Eastern and Western markets makes them desirable in those sections.

Choosing of Breed

Choosing of Breed

The choice of the breed or variety is largely one of personal preference after one has decided on the class of birds that will best meet his needs. If a general purpose fowl for the average farm that will produce a good number of eggs and furnish a sizable carcass is looked for, accompanied by fairly quick growth and early maturity, one of the American or English breeds will meet the need. If one looks forward to making eggs the important cash crop, one of the Mediterraneans will probably be chosen. It makes very little difference what particular breed and variety is chosen, the important problem of the progressive poultry raiser being to secure the best breeders possible of the breed and variety selected.

It is not always easy to get hold of good breeding stock, from the farmer's standpoint, though the agencies for helping him in this regard are fortunately increasing rapidly. Laying contests conducted by a number of the State Agricultural Experiment Stations are proving a great help. The choice of the breed or variety

FEW INSECT PESTS NATIVE

FEW INSECT PESTS NATIVE
Of all of the insect pests and diseases that attack cultivated crops and cut into the profits of American farmers, there are relatively few that are native to the United States. It is estimated that the damage to farm crops by disease and insects amounts to \$500,000,000 yearly. While many of the troublesome pests have come from European countries, Asia has contributed a share of them. Prominent among the latter is the San Jose scale, which is estimated to cost American fruit growers the huge sum of \$100,000,000 aince its introduction some 40 or 50 years ago.

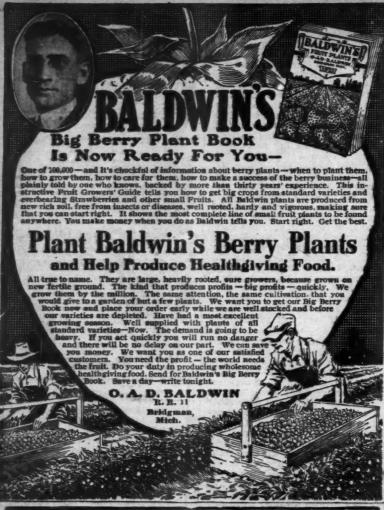














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Co-operation in Pacific Northwest

(Cencluded from page 7)
dreds of small handlers and buyers
in the Pacific northwest. It reduced
the number of handlers so materially that it immediately eliminated many of the abuses and reduced the over-head which the growers were forced to meet.

The organisation at once went out to do a mighty good work. It brought the growers and handlers of our fruit together in big mass meetings, and obtained co-operation along many lines. It established a date after which no contracts for fruit should be entered into. This was one of the best things accomplished, because it meant that the growers could not weit until harvest time before making their marketing connections, July 15 being the closing date.

The organization let apple buyers

The organization let apple buyers know what tomage they had to han-dle, and had ample time to make their arrangements. Daily reports of the arrangements. Daily reports of the movement of cars, prices received and so forth, were printed. The handlers agreed to meet in conferences and discuss marketing conditions. This was a splendid step because it seemed to practically eliminate the throat cutting, and by comparing notes they were able to eliminate questionable agents in the east. They also worked to get better transportation and storage.

They worked out a concrete plan for the development of the domestic and Canadian markets. They also took steps to develop the foreign markets and many other things too numerous to mention, at this time. The growers' agency did a remarkable work because "overproduction," with 8,000 or 19,000 cars in 1910 and 1912, that from 1916 to 1920 with a tonnage ranging from 20,000 to 35,000 cars we had no overaction.

production.

As a result of the work which the agency started, the entire pack of the northwest is today practically standardized. Pools are still being closed on the whole earlier than formerly. There are fewer handlers of our tonnage. There is a tendency for larger grouping. Much better storage facilities have been developed. Many new markets have been established. The locals have become stronger. There is a tendency to pull together and work along broader lines.

The agency itself ultimately failed for several distinct reasons. First, the government itself withdrew its support before the organization work

support before the organization work was completed. Too often this is the case with such activities. Second, no adequate arrangement was ever made adequate arrangement was ever made to really finance the agency. Sufficient funds should have been arranged for to enable the agency to employ the men of largest caliber, and to give them proper moneys for clerical help, transportation, printing, etc. This was never done. Third, the agency itself, at times, entered into activities which possibly were not within its function. Nevertheless it did a good work and has laid the foundation for future developments which otherwise might have been impossible.

Did the Mule Win the War?

Did the Mule Win the War?

O, BUT he did help marvelouely. The mule shows his ability to endure far more than the horse. The mule can get along without food or water for a long period, and would often work several days without rest. But when the mule's strength was absolutely exhausted he had intelligence enough to stop. This is more than some men know. The world is filled with men who do not know when to stop work. Where there are many teamsters on the farm and one or more of them is asked to drive the mule team, they object as they are joked about being mule drivers. I have great respect for the mule. He is a patient animal and is capable of greater endurance than the horse.

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MIER

Prune from Bud Sport

(Continued from plage 8)

50 to 60 prunes per pound of the ordinary small French variety. Beside the fewer prunes per pound, Mr. Coates tells me that he has received more per pound on the market for the larger variety. The new prunes ripen about 10 days earlier than the proper type which grew in adjacent. parent type which grew in adjacent rows of the same orchard.

rows of the same orchard.

In drying the new fruit stands up in the tray permitting the air to circulate around it and thus requiring no turning, nor does it stick to the tray. This new variety is gaining such favor among the growers that the nursery company now handling it have found it necessary to limit the number of buds they can supply to a single individual, so great is the demand for them. Almost no orders are being booked by them for trees or buds of the small French variety and it is only a question of time until practically all the new plantings will be of the new variety.

the new plantings will be of the new variety.

On trees of the new variety one may occasionally find small fruit spurs on small branches which produce prunes of the parent type showing the neck at the stem end, the smaller size and other characteristics of the small French prune. This reversion to the parental type of a few buds is considered as additional evidence that the new type had its origin as a bud sport. sport.

Mr. A. D. Shammel of the United States Department of Agriculture has said that if this new prune maintains its present premise it will undoubtedly be the most valuable addition to the commercial prune varieties ever introduced into America.

The "Meyer" Prune

More recently another French prune variation has been found which may also have had its origin as a bud sport but, most unfortunately, there is available no definite record of its origin. This prune for the present has been named the "Meyer." It has all the general characteristics of the French prune except shape and size. In the undried fruit the shape is much like the French prune, but larger, it dries very well and contains a slightly higher sugar content. Comparative production tests have not been completed, but in it there is another possible new commercial prune variety. Although in these two cases only

sible new commercial prune variety.

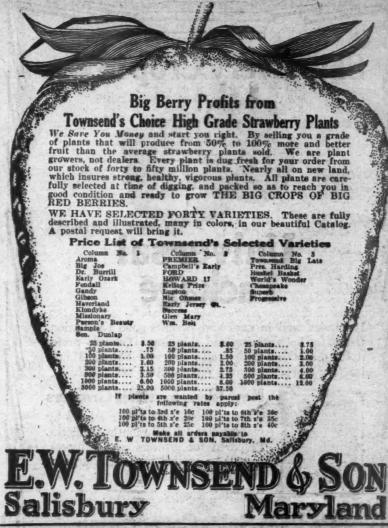
Although in these two cases only the characters of size and shape were definitely changed through bud sports, they are by no means the only characters that are subject to such changes. Sports may occur which will cause an increase or a decrease in productiveness, changes in color, flavor, period of ripening, indeed almost any physiological or morphological character may be altered in some way. The change may be large and conspicuous or small and inconspicuous, but in any case if it is a true sport it will reproduce the new type through grafts and buds. Such sports may not always come true to seed though they may do so.

Sports of an undesirable kind from

come true to seed though they may do so.

Sports of an undesirable kind from the viewpoint of the commercial grower may occur as frequently as the desirable kind. The running out of a variety may often be ascribed to the unconscious propagation of a bud sport which was inferior to the standard parent variety from which it came. Cases of this kind are known to have occurred in connection with the Washington navel oranges in California. Likewise new and improved varieties may as often have their origin in this way.

That we have in the search for and utilization of the bud sports a definite means of improving horticultural crops by securing better new varieties or by improving the existing varieties is by no means established, but the fact remains that sports do occur and it behooves the alert fruit grower to be on the "qui vive" for those which may be the source of new and better varieties.





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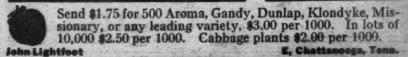
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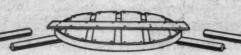
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General Chemical

The Department's Work (Continued from page 6)

attention being given to the selection of parent trees from which to propagate nursery stock. The ultimate value of this can hardly be estimated.

Work with Grapes Yielding Results

Work with Grapes Yielding Results
The department's work with grapes,
most of which represents long-time investigations, is now yielding results
which are perhaps even greater than
those expected when the work was
organized. In California, the work
naturally has to do with the vinifera
or European grapes; in the south, with
the muscadine group, which represents
native species adapted to southern conditions; while a limited amount of investigational work has been carried on
with native American bunch grapes,
which are widely distributed throughout
a large part of the country.

I have given some of the outstanding
examples of specific contributions by the
department to the fruit industry; yet
they touch only a few of the activities
under way that are designed to aid the
fruit grower. What is being done in
studying the diseases of fruits and in
working out methods of control is farreaching in its importance to the industry. One of the most significant accomplishments in this field is the service
that has been rendered in the control
of brown rot of peaches and other stone
fruits.

Every peach grower is all too familiar

of brown rot of peaches and other stone fruits.

Every peach grower is all too familiar with the seriousness of this disease and there are not many peach growers of experience who have not suffered serious losses from it, either while the fruit was ripening or during shipment. The development some years ago by a worker in this department of what is known as the "self-boiled lime-sulphur mixture" has almost completely changed this aspect of the peach industry. The disease was becoming so serious as virtually to eliminate the practicability of growing many varieties of peaches; it was seriously curtailing the industry generally. The fungicides used in controlling diseases of many other fruits can not be used against brown rot because of serious injury to the peach foliage. In the development of the self-boiled lime-sulphur mixture, a fungicide was secured which can be used without injury to the foliage and which, at the same time, controls in a very large measure, the development of the disease. This achievement means tens of thousands of dollars annually to the peach growers in practically every important peach producing region of the country, excepting possibly those west of the Rocky Mountains, where, because of climatic conditions, diseases are less prevalent than in the humid areas.

Other Important Achievements

Other Important Achievements

Other Important Achievements

Mention might also be made of the department's part in introducing dates and establishing the date industry in certain parts of the extreme south-west; of its aid in the development of pecan culture in the south and of nut growing generally; and of its work of gathering and diaseminating general information regarding fruit production and fruit varieties through bulletins and answers to literally thousands of letters every month regarding fruit problems.

And finally, it may be noted that all this service is rendered at an expense to the government which is decidedly small in comparison with its value to the nation and to the interests benefited thereby. I have said on a number of occasions that the department of agriculture pays a thousand percent returns to the citizens of the country on the money they invest in it—the appropriations which congress grants it. I believe that is true. But unless the people of the country take and use the services which the department is offering, the full benefits of its work, the full returns on their investment, will not be realized. I hope you—the fruit growers of America—will assure yourselves that you are making the largest possible use of the department's service. I hope you will bring your problems to the department; that you will use it and support it and make it better and more serviceable to fruit growers not only but to all the people of the country.

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The Home Work Fake

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Weeks on ustrated works conter, lependent better the news of the n

AVE you ever received through the mails an alluring offer to do certain work at home and make easy money creby? Throughout the country there such schemes afloat, and by their skillly worded offers and the flattering prosess they hold out, they make a strong peal—especially to the farm woman. The idea is that the woman who is tied

The idea is that the woman who is tied in her home can readily make money like a reular business woman without neglecting are of her home duties. Of course one can't expect to start a profitable business without a small investment such as paints and brushes for decorating, or a machine for hitting the socks that will bring such a good price when sold back to the agency for which one works.

The obliging firm makes this as easy for you as possible by selling you the necessary tools and materials at a very special price. They may even offer to supply you with cough yarn free—after you have purchased the knitting machine—for you to start on a pair of socks, the cost of the yarn to be deducted from the price they will pay you for the finished product.

And here is the little hitch by which they make the money that you lose. Their real tade is selling you the things you must have before getting to work. When you have completed some article and sent it back to them, it is fairly certain that there will be something wrong with it so that it cannot be accepted. After a few such discouragements you stop trying to please them and sometimes are innocent enough to believe them when they say the fault is yours. Practically all this so-called "Home Work" thrown back on the hands of the poor woman who snatched hours from her hard and leisure in hopes of adding to her income. We would not go so far as to say there is no honest agency in schemes of this sort but, unless you are in a position to investigate very carefully, they are apt to grove a costly disappointment.

Help For the Home-Keeper

N THIS and succeeding issues of the AMERICAN FRUIT GROWER, our readers will find an article each month bearing directly upon the problems of the orchard one. Food, health, conveniences, clothing, tial and kindred subjects will be discussed with a view to aiding the orchard woman in readily round of duties and pleasures.

It is easy to recognize that her problems her from those of the city housekeeper to can meet many emergencies by a call her telephone, whether it be the emergency requiring the doctor's prompt attento, or the emergency demanding an extra the for the unexpected guest. In the or-

chard home the housekeeper must evolve that dish from the materials already on hand, for there is no delicatessen shop 'round the corner. She needs to be better prepared than the city woman to ward off sickness and to nurse it when it comes, for the doctor is often many miles away and it is not always possible to get a trained nurse to come to the country.

So it goes in many other matters. The orchard woman has no one to turn to but herself when the necessity arises. Can we help her to be more self-reliant, more efficient, less tired, more capable of keeping herself and her family well, well-fed, well-dressed, well-informed, well-cared-for in every particular? These things make for contentment and happiness. They also mean a substantial saving in money.

In a limited space we can but give a few of the more important facts that are embraced in the general subject of home economics. That such knowledge is in demand, was proved to us recently when a young girl, who has not yet graduated from her course in home economics, was offered a position as teacher of this subject at a salary of \$40 per week, and this in a season of declining salaries and scandalously underpaid teachers.

Sunday Blue Laws

THAS been said that the reforming spirit, so admirable when applied in the right direction, sometimes becomes a disease, and the one possessed of this spirit cannot rest unless trying to reform some-body or something. The efforts of the blue law enthusiasts to restore the puritanical observance of the Sabbath seem fairly to come within the scope of this criticism. The Puritans, as you may recall, are popularly supposed to have made it illegal, along with most other agreeable pastimes, to kiss one's wife on Sunday. The present-day Puritans would forbid a host of innocent pleasures that are unattainable to many except on that day.

Heated discussion has been aroused be-

Heated discussion has been aroused between the "blues" and the "rosies"—if we may so express it. The opposing factions divide roughly into two groups. The objectors to the more rigid observance of the Sabbath come from the cities, and its advocates from the rural districts. On general principles we would be inclined to say the country is right, for its impulses and intuitions are sweeter and saner than those of the city, but looking at the matter more impartially it is easy to see why urban communities should be more disinclined than rural to have their Sundays strictly regulated

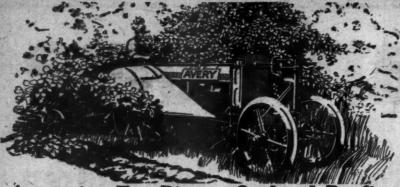
For a large majority of the latter, a legally "blue" Sunday would not vary much from their habitual way of spending that day. But this is not so in cities. Hosts of worn workers who toil all week indoors under high nerve pressure, take their pleasure on Sunday in a hundred innocent diversions. In forbidding these we strike at the roots of urban hygienic requirements. Thousands would break down but for the rejuvenating effect of Sunday recreations. These may well include going to church, but they include also visits to the parks, to the movies, to friends who can only be reached by street cars. Keep your own Sunday as seems right and best to you, but think of the other side before giving your votes to the Sunday blue laws, and keep in mind the words of the Bible that "man was not made for the Sabbath, but the Sabbath for man."

How Mother Will Vote

WOMEN throughout our country can now make their voices legally heard in political questions. Will the little babies born this year, we wonder, have a better chance in life than those born of unemancipated mothers? Other things being equal, we think they will. No one imagines for a moment that the entrance of women into politics will stop disease, sin and misery, but some of us dare to hope it may mitigate these.

When the soft, wee baby lies in its mother's arms, she weaves endless bright dreams around its future. If it be a boy, how she longs to assure to her son a training that will develop to the fullest his mental and physical powers, an experience through which his ideals (instilled by herself) may come unsmirched, his trust in God and man maintained unshaken. If it be a girl, how may that dear daughter best be shielded from all evil, preserved in radiant health and innocence, fitted for the great and joyous destiny of carrying on the race? Such dreams and longings have floated through the mind, perhaps better say the heart of every mother, and now she has the chance to enlist the mighty force of a whole nation to help her make these dreams come true.

In the recent presidential elections, women as a whole showed about the same measure of discrimination as the mencertainly no more and hardly possibly less. They realized dimly that indeed none of them had much to do with the choice of the candidates, and a president seems pretty big and vague and far away. But let it come to the vote whether we shall have good schools, good sanitary regulations, temperance laws, laws affecting health, morals and manners, then Uncle Sam will hear from the women, from the mothers, in no uncertain torses. They'll make mistakes. Yes. There'll be disillusions, but hope and courage will endure. Women will fight long and hard to make the United States a good place in which to rear their children.



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Only a tracter can give you the semonscal power meeded to work your orchard in the right way at the right time to get the best yield—speedy power to take advantage of weather conditions and hurry up your work—tireless power that can do in hours work that now takes days—hardened power that's ready in the early Spring when power is needed most—all of which means lower costs, more fruit and greater enjoyment in orchard work.

swers this problem for you with the er small tractor—especially adapted for tork. Built low enough to go under the powerful enough to pull two plows, arrows, drills, etc. Has long sloping that the problem of the problem of the problem.

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No. 8 Planet Jr. Horse Hoe and Cultivator is adjustable for width and depth. Hoes and cultivates, throws the earth toward or away from the row. Does more things and does them better than any other one horse cultivator.



Helps in Home Nursing

By Mary Lee Adams

PROPER diet and clothing, good sanitation, rest, fresh air and exercise go far toward maintaining a family in good health, but the time comes when illness cannot be prevented and one should know how to avoid making the doctor's task more difficult by careless and ignorant nurs-

ing.

Too often people do not play fair with the doctor. They think it doesn't make so much difference if giving the medicine is neglected for once, a little larger dose will make up for it next time. The only thing that might excusably interfere with the regularity of the dosage, is needed sleep. At the time the doctor gives his directions, ask him if the patient should be waked to take medicine.

Sometimes, when quiet is ordered, the children are allowed just a peep

the children are allowed just a peep in at the door and a smile at the sick. That certainly couldn't hurt anyone, and surely a brief glimpse, even if the case be contagious, is no menace to the children. But the doctor, when he has mentioned regular dosage, quiet and isolation, means every word if it and you yield to his instructions. of it and you violate his instructions at a grave risk to patient and family. Visitors are often permitted to stay until the patient is fatigued.

Care for the Nurse

Even if the nurse be yourself and you are the mother of a sick child, do not forget that upon your continued efficiency depends the ability to do your best by the patient. Some hours in each 24 are needed for rest, nours in each 24 are needed for rest, exercise and regular meals. The member of the family who has officiated as nurse, is frequently heard to boast that she did not get a wink of sleep for 48 hours, that she had not taken her clothes off for many nights, that she had snatched enough food to keep

In most cases this indicates incom In most cases this indicates incompetence rather than devotion. Though such sacrifices may be demanded during a short period of severe illness, the sensible nurse endeavors to arrange that someone else may attend the patient during his quieter hours while she rests. As a rule, he may be left alone part of the time and provided with a bell to summon help promptly, for nothing makes a weak person more nervous than the dread of not being able to get attention when wanted.

Only by caring for her own health

Only by caring for her own health Only by caring for her own health can the nurse avoid a speedy diminution of her helpfulness. Upon her self-control and calmness, the patient's state of mind largely depends. In every case he must be diverted from sad or annoying thoughts. Where there is risk of contagion, the nurse should always change her clothing and wash her hands well with soap and water before meeting other people. Such precautions are among the greatest safeguards to herself and others.

Rules for the Sick Room

Rules for the Sick Room

Rules for the Sick Room

Few private homes can fulfill the requirements for ideal conditions for home nursing, but the ideal should be known in order to approach it as nearly as may be. Intelligence will suggest that the sick person is better off in a quiet, sunny and airy room; that a case of contagious disease should be as far from the living quarters of the house as practicable; that the busy housewife who must nurse as well, has to consider convenience to her other duties.

has to consider convenience to her other duties.

In the sick room the light ought not to be directly in the eyes of the patient. It is well if a cross current of air can be procured so that the entire atmosphere of the room may be swept clean twice daily. One window must always remain open to insure a supply of fresh air. Even a well person droops if forced to breathe stale air, and it is most injurious to the sick. Drafts are avoided by

screens, by letting the window from the top, by inserting unde lower sash two pieces of woo inches long and about one inch ap to which a ten-inch strip of thin a lin, as long as the window is wide, been tacked. A chimney makes the best kind of ventilation as impure air is drawn up the flue.

Care of Room

A few pieces of simple furniture plain walls are best. If the pair is feverish, the usual wall paper per terns catch his eye and he is led to to count and combine them until brain is confused. Sweep the main is confused to sweep the main is confused. Sweep the main is the form over which a distinct the form over which a learn moistened salt, or torn bits of a newspaper. Dust the furniture wipping with a cloth moistened with the furniture wipping with a cloth moistened wipping wipping with a cloth moistened wipping wipp newspaper. Dust the furnitum wiping with a cloth moistened disinfectant.

disinfectant.

Remove all left-over food, and dirt and dust and soiled linen mediately, except where such linen may carry dangerous germs. Such is for several hours in a vessel material and discovered. A good solution for purpose is made of three parts can acid, ordinary laundry soap dissoin one and one-half parts water, 100 parts water. Add the acid to dissolved soap and stir well. I add this to the water. Care is assin handling carbolic acid.

To Make the Bed

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To Make the Bed

For convenience in waiting on a patient, a high single bed is presented, a high single bed is presented by the patient of the bed spring. Make the bed me every day but, with the patient in this is no easy task unless the paused in hospitals is followed. Fineverything that is to be used in placin readiness near at hand. The kelothes are loosened on one side at the patient rolled well over to the side while the clothes are loosenfrom the other side, from the head foot.

from the other side, from the new foot.

With the patient still under or the soiled sheets are folded up against him and the fresh all which have been made into a long are spread smoothly up to these, the patient is rolled back to the smide of the bed, the soiled sheets drawn off and the fresh ones smoothly up to these, the patient is rolled back to the smide of the bed, the soiled sheets drawn off and the fresh ones smoothly up to the sheet is changed by drawing the sheet is changed by drawing the sheet out at the foot of the bed, ling the patient under the blant the patient under the blant the blanket is removed.

The under sheet has the greatlowance at the top and is the well under the mattress so that it not come loose and wrinkle under

well under the mattress so that if not come loose and wrinkle unde shoulders of a restless personbottom of the upper sheet is sim tucked far under the mattress to the movements of the feet may uncover them. Tuck all sheets by without binding the patient apoint. If a draw sheet be used, it down the center and lay it at the middle of the bed with the to the top and the hemmed pushed well under the mattress.

Hygiene in Sickness

The daily bath is beneficial. The daily bath is beneficial, the face frequently, and when is given in bed, let the patis between the folds of a blanket, at hand a basin of warm water, wash cloths and towels. Wasia small portion of the body at a Dry each part thoroughly and immediately. Work from the downward. The patient lies in his back and then on his face to of the back being washed. If the tor prescribes an alcohol rub it venjoyed. ng window ng unde of woo inch so of thin my is wide, hy makes ation as

Growe

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t tea lear furniture sistened w food, sle ed linen such line erms. Su a vessel m and close ion for the

parts carbo cap dissolves water, no e acid to the well. The led iting on t uiting on the ded is presented bed by placed corner the bed from patient in its p

ded up de resh she to a long n

The upong the solid he bed, less the blanks pread on bandaded band the gr nd is to that it cle under person.

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Electricity Not a Fad

By E. N. Cable, Ohio

ectricity in the Orchard Home

by E.N Cable

WANT ELECTRIC LIGHTS?
If you have been wishing you had electric lights, but have sever leaked into the matter to electric power on the farm, Mr. Cable can help you with your planning; Just write to him about it, care American Fruit Genera, ell State-Labe Bide.
Chicago, ill.

FONE had to milk the cows, sweet the floors or wash the dishes only one or wash the dishes only of the dishes of the d



You Can't Escape

Tooth troubles if you leave a film

You should try this new method of teeth cleaning. Try it ten days without cost. It combats the film which dims the teeth and causes most tooth troubles. See and feel the results. To millions they are bringing cleaner, safer, whiter teeth.

The tooth wrecker

Film is the great tooth weeker. A viscous film clings to the teeth, enters crevices and stays. The ordinary tooth paste does not end it. Old ways of brushing leave much of it intact. And very few people lawe escaped the troubles which it causes. It is the film-cost that discolors, not the teeth. Film is the basis of tartar. It helds food substance which ferments and forms acid. It holds

the acid in contact with the teeth to

Millions of germs breed in it.
They, with tartar, are the chief cause
of pyorrhea—a disease now alarmingly common.

A new dental era

Dental science has now found ways to combat that film. The methods have been amply proved by years of careful tests. Now millions employ them. Leading dentists everywhere advise them.

The methods are combined in a dentifrice called Pepsodent. And, to let all know how much it means, a ten-day tube is being sent to all who

Five desired effects

Pepsodent brings five deaired effects. It combats the teeth's great enemies as nothing has done before.

One ingredient is papsin. Another multiplies the starch digestant in the saliva, to digest starch deposits that cling. The saliva's alkalinity is multiplied also. That so neutralize the acids which cause tooth decay.

Two factors directly attack the film. One of them keeps seeth so highly polished that film cannot easily

adhere. Every application repeats these results.

Send the coupon for the 10-Day Tube. Note how clean the teeth feel after using. Mark the absence of the viscous film. See how teeth whiten as the film-coat disappears.

What you see and feel will be a revelation, and the book we send will explain how each effect is natural and necessary. It is important that you know this. Cut out the coupon now.

Pepsodent The New-Day Dentifrice

scientific film combatant or bined with two other modern req-usites. Now advised by leading lastists everywhere and sup-plied by all druggists in large

10-Day Tube Free

THE PEPSODENT COMPANY, Dept. 467, 1104 S. Wabash Ave., Chicago, El. Mail 10-Day Tube of Por

Only was tube to a fac

SPRAY YOUR FRUIT TREES



GIVEN

Apples-\$900 per Barrel

It is reported that the thoroughly sprayed apples grown by a New York State farmer are now selling at \$9.00 per barrel.

Thoroughly sprayed apples always bring highest market prices.

Protect this year's crop by an immediate delivery of a "Friend" Power Sprayer.

To avoid delay see nearest "Friend" dealer, or write direct to the factory stating whether large, medium or small sprayer is wanted.

> No further decline in prices this season.

ID" MANUFACTURING CO.

Gasport, N. Y.

"Friend" Sprayer sales at New York State Fruit Growers' Convention greatly outnumbered previous years.

The season is on-act now!

Free Spray Calendar Tells When to Spray-What to Use

THIS information is the result of years of experiment and research. It tells how to care for apples, cherries, plums, grapes, currants, gooseberries, peaches and other fruits—explains insect enemies and diseases of potato, tomato, cabbage and vine crops. Directs the mixture of all spray materials, tells the proper time for spraying and how to apply each particular spray. You should not be without this Calendar if you grow fruit of any kind. We will gladly send it free. Quality brings the high price and quality is not possible without spraying. Write for this free chart today. HIS information is the result of years of experiment and research.

Dow Sprays Increase Fruit Profits

Dow Powdered Lead-Arsenate

Dow Powdered Lead-Arsenate
Extremely light and fluffy—Dow Powdered
Lead-Arsenate possesses many advantages
over the heavier and more granular varieties. It mines so readily and remains so well in
suspensions that it entirely covers foliage
with a milky, filmy coating. Because it
reaches and covers every part of foliage and
branch—because it sticks where it touches
and because of its high content of amenic, it
has a deadly effect on all forms of foliageeating pests. Dow Powdered Lead-Arsenate
is a great economy and a great convenience.
Managers of large orchards and directors of
state stations have used this product for
years and now purchase in carfood lots.

Pecked in 44, 1.5, 10, 28, 50, 100 and 200 nound and now purchase in carbon, loss, ed in 1/6, 1, 5, 10, 25, 50, 100 and 200 pound iners. Sold through our dealers or direct

Dow Powdered Lime-Sulphur

Controls San Jose Scale, Oyster-Shell Scale, Blister Mite. It prevents scab, rot and

rungous disease.

This is the celebrated, genuine, Dow LimeSulphur Solution with water evaporated. It
goes to the orchardist in a convenient form
that does away with excessive freight charges.

This fine powder is packed in compact, tight
containers and is a handy package to store
in a corner. It is always ready for action,
taking up no space—no awkward barrels in
the way. There is no liquid to freeze, to leak
out or to pay freight on. Dow Powdend
Lime-Sulphur goes into solution easily, tests
33% active ingredients and has been approved by the most expert managers of large
commercially profitable fruit organizations. Packed in 1, 5, 10, 25, 50, 100 and 200 pocontainers. Write for prices



The Luck of the Irish

By HAROLD MacGRATH

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In the plumbing shop of Burns, Dolan & Co. worked the Irish journeyman, William Grogan, whose view from the window of the shop was upon the sidewalk where he looked upon the ever-changing panorama of passing boots and shoes. William was somewhat of a dreamer, and to him the step of each passer-by was a wonderful story, whose plot was ever in embryo. But one pair of shoes in particular became of peculiar interest. They were feminine, and passed regularly at eight of clock in the morning and four in the afternoon except on Saturday and Sunday. For three years he had watched them. William read a good deal and longed to be foreign lands, but always considered such a thing far beyond his means, as he saved his money in hopes that some day he might have a shop of his own. One day he received a letter from a law firm asking him to call. It developed that William had been left flarge sum of money by an uncle who had just died. To suddenly come into possession of great wealth bewildered William had been left flarge sum of money by an uncle who had just died. To suddenly come into possession of great wealth bewildered William had been left flarge sum of money by an uncreast in the plumbing establishment where he worked, and to use the rest of it in gratifying his wish to see the world. After discussing with Mr. Burns the purchase of an interest in the business and buying a steamer ticket, William had a lively encounter at the doorway of a restaurant with a well-groomed man and as attractively-dressed woman. This installment finds him just going aboard the vessel for his foreign tour.

DNG before the day of sailing his face became familiar to the clerks in Cook's. His questions ate up all their handy folders and circulars. The day before the departure he came in, bubbling with a fresh set of questions. He had forgotten all about "renting" an elephant. What were current prices for pachyderms by the mile? While the clerk was explaining to him that the Bombay office would have to take charge of that, William heard a woman's voice at his elbow. He turned. He never forgot faces. After a moment's digging, he recognized the young woman as the one to whom he had spoken that memorable night at the movie. He became interested at once.

She was pretty, but her face was releaved drawn and these was day.

night at the movie. He became interested at once.

She was pretty, but her face was pale and drawn, and there were dark shadows under her eyes.

"What is the next sailing to Naples?"

"Saturday."

"Nothing before?"

"The Ajax sails to-morrow at two. It's a trip around the world. Perhaps I can find you a berth on that." The clerk investigated. Presently he informed her: "We can put you in 247 with two old ladies. The lounge. That's the best we can do prior to Saturday. Second-class is all gone."

"A trip around the world," she mused. "How much would that be and how long the trip?"

The clerk named both price and time.

The clerk named both price and time.

"Very well; I'll take that."

"To-morrow, between two and three; steamship Ajax, tour of the world, San Francisco in February," droned the clerk.

The young woman pushed a flat packet of bills across the counter. These bills had the appearance of having dwelt in idleness for long. William saw her thrust the ticket into her hand-bag. What amazed him was that she did not give the ticket a single scrutiny. She slipped the hand-bag over her arm and departed.

"Well, what do you know about that?" said William to the world at large.

rage.

"Queer case," volunteered the clerk who had served the young woman. All over in fifteen minutes by the clock. It generally takes a woman six months to decide when she wants to go somewhere. She starts for Naples and goes around the world!"

"What's her name?" asked William. "Jones, the eternal Jones; and I had an idea that it was going to be Jones. A hundred thousand Joneses come in here during the year, and only about ten per cent. are Joneses. She looked to me to be running away from something or some one. A queer lot come in here. Well, it's all in a day's work. Pretty, too. Wager these bills

came out of the bottom of a trunk?
The clerk strode off toward the
cashier's grille.
"Say," said William to his own
clerk, "that young woman reminds me
of some one."

"Who?"

"Me. It took me only twelve minutes to say 'Good-bye, Dolly Gray, I must leave you'. Huh?"

The clerk laughed.

"So I saddle the elephant in Bombay? Ye-ah. And say, have you got me labeled with the queer ones?"

"No, Mr. Grogan." The clerk laughed again. "You're the resthing; and I wish I were in your shoet. Everybody perks up when you drog in."

William pocketed his folder on

Everybody perks up when you dro in."

William pocketed his folder on Burma and departed. He found that he could not put completely from his mind the thought of the young woman. Her face haunted him persistently. Was she running away from her husband? Was there a Handsome-Is he the background somewhere? Like as not. William, it has already been remarked, retained few illusions; and he generally drew upon hard facts when in doubt. He never picked up a newspaper these benighted times that something of this sort wasn't going on. Wives were eternally running away from husbands, who didn't always bother to pursue them. The causes were as thick as the sparrom in the park. Mismated; the devil did a good job there, was William's opinion. The hullabaleo of a Fifth Avenue wedding, money and cast they generally came to this, flight and scandal. Not that he was particularly prejudiced against the rich; but they set a mighty bad example for the poor, who were more or less imitative, like the apes.

W EDNESDAY came, William got up before dawn se as to be thoroughly awake when the day began. He had a lot of things to do. First and foremost, he had to pass away the time. He was for all the world like you and I were those bygome Christmases and Fourth-of-Julys; we never had any candy or fireworks laft for the afternoon and evening. He bubbled with life. He had health and wealth and youth. And if the devinad come along just then and offered mere beauty in exchange for a title of health or wealth or youth; William would have seized him by the scraff of his neck and flung him into the alley.

I shan't attempt to chronicle all the happy, foolish things he did that marvelous morning. Among other thing he visited the shop and bade good-byto every one. The little bookkeeper sniveled openly. She never expected to see William Grogan again. If he wasn't eaten by sharks, he would fall into the hands of cannibals. Burn pooh-poosed this idea; all Bill had to de was to keep his eye on his cash. There were worse sharks out of water that in it.

At one o'clock William went aboard He saw his steamer trunk and grip.

were worse sharks out of water that in it.

At one o'clock William went about He saw his steamer trunk and grip safely stowed away in his cabin, which he was to share with two others a yet unknown. The little card at the left of the door read:

Mr. Grogan.

Mr. Greenwood.

Mr. Henrik Clausen.

He hoped that they were neithe professional gamblers nor whisky merchants; outside of that he didn't can what they were.

He went on deck again and begate explore. By two o'clock he had been everywhere except in the stokehole, and he was saving that again some rainy day. He was unobtrusiw and the busy officers he quizzed under stood that his interest was purely

a trunki ward the

ower

his own eminds welve min-ly Gray, I

t in Bom-ve you got ones?"
The clerk the real your shoes,

folder of found that y from his ing woman ersistently, in her huseome-is in ? Like as dy been roons; and he facts when up a new-times that asn't going y running o didn't al-hem. The

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e sparrow
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William gots to be thorday began, odo. First pass away I the world ose bygons "f-Julys; we reworke left rening. He health and if the deviand offered for a title the, William y the scrufi im into the

onicle all the did that marother thing de good-by bookkeeps were expected gain. If he e would fall had to do cash. Then water that

went aboard k and grip cabin, which co others card at the

gitimate, though somewhat inopporme. There was something of the
ger boy in William, despite his cynal outlook. The great steel canyon,
hich went down to the very keel of
a ship, fascinated him more than
ything else. The chief engineer was
ish; so William told him the history
his life and clung to him as long
he could.
It is a fine thing to go on a very

his life and clung to him as long is he could.

It is a fine thing to go on a voyage of discovery, for the true pleasures of ite are not to be found in recurrences. Ind to William, what marvelous disposeries were on the threshold, waiting the beautiful before his eyes is trange seas, strange lands, strange coples; and, above all, there was that lephant with the silk-and-spangle upola or thingumy on his back, there was, as you may readily believe, to corner in his thoughts given over the Greek Parthenon, or Michelmgelo, or Rafael, or Tiziano. I may sell confess right here and now and have done with it: William never tent into ecstasies over the wonders of antiquity.

tent into ecstasies over the wonderof antiquity.

The living things, the quick, not the
deal, stirred his interest. It is true
has the pyramids stunned him; but
his was due to his appreciation of the
tremendous labor involved in piling
the granite blocks one upon the
other without the aid of steam-hoists.

the granite blocks one upon the other without the aid of steam-hoists.

AT LENGTH he went down into the huge shed where everything was basile and seeming confusion. Bale after bale and trunk after trunk sailed skyward, to disappear mysteriously into the bowels of the ship. People were hurrying to and fro, and there was much kissing and hand-shaking. William suddenly awoke to the dismal fact that he was dreadfully alone. In all his busy years this thought had never before come home to him so keenly. There was not a soul in all the wide world who really cared what became of him, where he went, what he did, or how he died. Burns was all right, and so were the boys over at the engine-house, but they lacked something. He had no regret in leaving them; he would have no real joy in returning to them. He eyed with envy the noisy, excited groups of the happy family (see Cook's folders). These groups were made up of pilgrims coming down from small cities, country towns, farms, West and Middle West. They were making the trip in dozens and double-dozens; and shortly they would build little glass-topped walls around themselves, and woe betide the tripasser, especially if he happened to be a red-headed, lonesome guy named William Grogan.

He fell back upon his innate philosephy. All his life he had been jogging along on his own. Why worry over this bunch of male and female fossils? He was here to see the world; and if he made any friendships these would be by-products purely. After all, old Mother Hanlon would be glad to see him back. And wouldn't the test of the bunch sit up and take notice when he began to gab-fest! When I was in Hong-Kong I licked four chinks one night." Think of the see thinks one night." Think of the see the fire in that off-hand manual.

ting the fire in that off-hand manll at once he remembered why he
gone down into the shed and taken
place by the gang-plank. He
need to see if that girl came on
red alone. He hoped she would.
looked too nice to be mixed up in
thing shady. Funny thing, he
led, how you could spot a woman
a was off-color. You couldn't give
reasons; there wasn't any way
aplaining it; you just knew, that
all. This girl didn't look the part,
that was all there was to it.
he came into view at length. He
led relievedly. There was no one
her. Lonesome kind like himself,
walked confidently to the ganglt, looking neither right nor left.
face was lighted by subdued
erness; there was neither anxiety
ler eyes nor dissatisfaction on her
William dropped in behind her,
er automatically.
well-dressed man, a fat suit-case
th hand, growded past him rudely.

William stretched out a detaining hand, none the less powerful because the nails shone pinkly.

"Say, bo, why the unseemly haste?"

"Beg pardon!" mumbled the offender, none too politely, as he wrenched himself loose and went on.

"Well, if that guy's with us," thought William, "how we're going to love each other by the time we get to Bombay! For a nickel.

"M-m-m-m! boomed the whistle. William ducked instinctively, and hurried on board.

liam ducked instinctively, and hurried on board.

"Nothing the matter with the old lady's lungs. That was some toot! Well, I guess this is good-bye to little New York. See you later!"

As the ship drew out into the river he stood in the waist, watching the men close the hatches. He chanced to look up toward the promenade-deck. A young woman was in the act of crossing from starboard to port. The first thing that came into his range of vision was a pair of twinkling tan shoes. This range of vision, be it noted, was identical to that he had from his cellar window. His heart gave a great bound. His school-teacher was on board!

CHAPTER IV

CHAPTER IV

WILLIAM was never able to explain with any lucidity why he leaped so abruptly to such a conclusion. He just knew, that was all. He had seen those feet go past his cellar window too many times to have the slightest doubt of their identity.

He had not seen her face, the railing having cut across that and obscured it. But there was no reason on earth why he shouldn't see the face now, after waiting for three years. So he sprang up the ladder, thrilling in every pulse. There she was, leaning against the port rail, staring westward at the pearly smudge hanging over the receding city. William had never heard of Medusa, nor the shield of Perseus. He was, nevertheless, turned into stone for two consecutive minutes. There is nothing gentle or gradual about disillusion; it is a blow, swift and hurtful. William stood up under it passably well, however.

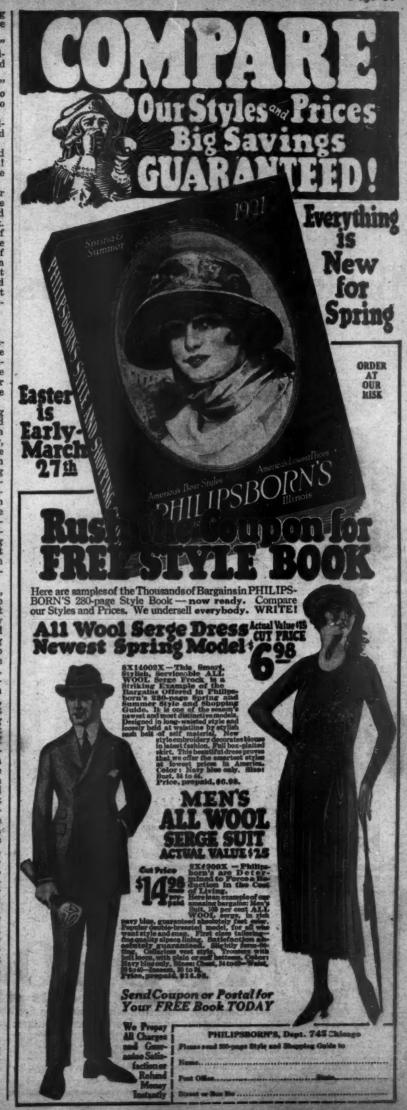
is a blow, swift and hurtful. William stood up under it passably well, however.

Yonder was his school-teacher, without doubt; but she was also the young woman he had sat beside at the movie and whom he had mentally tangled up with runaway wives and all that. Finding his dream slipping from him, he made frantic efforts to catch hold and retain some of it. He simply could not let it go all at once. For three years he had endured yonder girl with the attributes which would belong, did such beings exist, to a demi-angel; and thus it was not humanly possible to let so fine a thing go to smash without making a fight. So he began to mobilize excuses. If she was a runaway wife, then the husband was a brute; if there was a Handhome-Is in the woodpile, then he had been too clever for her; and so on and so forth. He reached around blindly for other straws. She might be the daughter of a rich man, running away to avoid marrying the father's favored suitor. This ideapleased him mightily; it restored his belief in his ability to judge humans, gave him a footbald on earth again. Without his approaching the fact, william had fallen in love with a shadow; and the unexpected appearance of the substance had thrown him off his balance.

He was perhaps more than normally romantic; probably by this time you have guessed it. Yet, on the other side of the scales, there was good ballast in everyday common sense. But there was in him a something latent, stronger by far than romance or common sense; we call it superstition. Trust the Irishman to have this kink in his cosmos. In William it had been a negligible quantity for a long time, but it cracked its shell at this moment and fluttered forth. This wasn't any ordinary accident, he reasoned; something was meant by it. For three long years he had dreamed about this girl, and there she was, half a dozen strides away.

(TO BE CONTINUED)

(TO BE CONTINUED)





Bankers and Fertilizers

Bankers are keen judges of what is "good" and what is "bad" in the business of farming. The Federal Land Banks, and bankers in general, consider good fertilizers a sound investment always.

The world must have food—a new supply must be grown annually—over-production and low prices one year usually mean smaller production and higher prices the next.

They are quick to recognize the progressiveness of the farmer who, too, reasons it out that way and orders his fertilizers with an eye to the future. It strengthens his credit. It is good business—for him

And that is the sort of farmer who insists on good fertilizers. A A C Fertilizers are good fertilizers. They are a farm asset that never fails to make farming a better business—each crop a better crop-than it would be without them.

When you use A A C Fertilizers you put into your agricultural efforts the results of over half a century of crop and soil study, of thousands of field tests—fertilizers made right from the best ingredients the four corners of the earth can provide.

Write for-

Suggestions as to the best fertilizers for your soils. Booklet "How to Get the Most out of Fertilizers". The A A C Agency if we have no dealer near you.

The American Agricultural Chemical Company



Moe HOUSEKEEPERS EXCHAI Edith Randolph

We will give \$1.00 each for original, helpful suggestions that will save time, strength or money in all sorts of housework. Unaccepted manuscripts will not be returned but will be promptly destroyed. Address "Housekeepers' Exchange," AMERICAN FRUIT GROWER, Chicago.

When my brown shoes get skinned on the tip of the toes I put a thin coat of shellac over them and then polish them. No one can detect that bits of the skin are missing. I use white shellac on tan or gray shoes.

R. M. H., Pennsylvania.

For garments that have ribbon shoulder straps, it is far better to sew on small dress snaps than to sew the ribbon on. The snaps will not pull out and the garment is far more easily laundered.

P. N., Pennsylvania.

P. N., Pennsylvania.

Before storing shelled beans, put
them in the oven and heat through.
Then sack them and they will keep for years without weevils getting in O. A. B., Oklahoma.

Should one happen to get chewing gum stuck on a silk or cotton dress, take a wet cloth and dampen the under side. Soon every bit of the gum can be pulled off. J. C., Mississippi. It often happens that persons living a long way from market must resort

a long way from market must resort to some way to keep fish fresh. A little vinegar put on the fish, inside and out, will keep it fresh for a short time even in very hot weather, better than it can be kept on ice. Often the flavor is improved by this treatment.

E. O. H., Missouri.

If you keep a box of colored pictures, cut out dolls and colored crayons to amuse a child caller, you will have a better opportunity to chat with the mother.

H. H. P., Tennessee.

One pint of gasoline, one cup of strong vinegar and two ounces of

lump ammonia applied with a brush a all parts of the bed and walls when there are cracks will soon rid a plan of bed bugs.

M. E. B., Rhode Island.

M. E. B., Rhode Island.

To put pennies in a cake without rendering it unfit to eat wash the coins in hot water and wrap in a bit of waxed paper. When the cake cold cut slits in the top and slip is the coin alongside the knife. Ice the cake carefully and no one can to where the pennies went in. This is clean way to put in the coins which so delight children at parties.

J. J. O'C., Washington, D. C. The linoleum in my bathroe looked unsightly because the origin pattern had worn off in places, bought table oil cloth in a tiling pattern and adjusted it firmly over the old linoleum by the use of flour past. The effect is good, it wears well, is more easily cleaned than the linoleum and costs much less.

and costs much less.
L. T. W., Virginia

L. T. W., Virginia.

To mend lace curtains cut a pies
from an older curtain, dip it in edi
starch, lay it flat on the curtain to be
mended and press the starched pies
with a hot iron. It will hold firm
until the next laundering when the
mending may be repeated.

M. E. B., Ohio.

A root of parsley may be brough
into the house in the fall and plants
in a suitable vessel. This will furnity
you with flavoring for soups and re-

in a suitable vessel. This will furniyou with flavoring for soups and ganish for meats and salads through it winter.

E. S., Pennsylvania.

An easy way to label jellies is allow the paraffin to harden over top and then scratch on it the variof the jelly. It will last and can easily read.

H. J. W., Oregos.

Before using new enamel was grease the inside with butter. It was not crack or chip afterwards.

Z. W., Arkansas.



A FEW DISHES FOR INVALIDS Bird's Nest 1 slice toast

Salt to season
Separate egg. Salt the white and
beat until it is stiff enough to slip
onto a slice of hot buttered toast. Depress the center with a spoon into a small hollow, and into this slip the yolk. Brown for a moment in the oven and serve very hot.

Broiled Oysters Lemon juice Parsley Ovsters in shells

hot oven with the round part down to hold the juice. When the shells open in the heat, remove the upper shell, season with salt and lemon juice and serve in the shell with a garnish of pareley. Scrub the shells. Place in a very

Malted Milk
½ cup boiling
ik water
uater 1 tablespoon jelly

Malted Milk

1 tablespoon
malted milk
water
Water
Cracked ice
Mix the malted milk to a smooth
paste with a little of the hot water,
add the jelly (or a little fruit juice)
and the rest of the hot water and stir
until smooth. Add cold water and
ice. If a hot drink is preferred omit
the ice and use hot water instead of
the cold.

Eggnog

teaspoon salt 1 egg tablespoon sugar 1 tablespoon fi cup milk juice

Beat egg, add sugar and salt, ble thoroughly, add milk and fruit is and serve at once. Or separate egg and beat the yolk, sugar and stogether until creamy. Beat the wintil foamy and fold in lightly. So persons like a grating of nutmeg at this.

Soft Custard

lla b

ATTERI

Enclose

tablespoon sugar cup milk Yolk of 1 egs

Scald milk in double boiler. It yolk, add sugar and salt. Pour scal milk on gradually. Cook in do boiler over water, stirring constantil mitters. until mixture is creamy and coats spoon. Remove at once from the ter and flavor as desired. If cust curdles it may be beaten smooth a dover egg beater.

Rice Pudding

1/2 cup sugar
1/2 teaspoon as 1/2 cup rice 8 cups milk

Cook the rice with the milk salt in a double boiler for half hour. Add the sugar and raisins cook 15 minutes longer.

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g blespoon f ice and salt, bland fruit is separate sugar and seat the wholightly. So f nutmeg w

d k of 1 egg easpoon sa boiler. It ... Pour scal ook in do ing constar and coats from the dd. If cust n smooth

ng cup sugar teaspoon

the milk r for half and raisins

Styles for the Month



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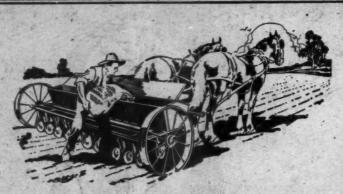


INSTANT-GAS









Restore the Potash

During the past few years farmers have been urged to bend every effort to produce maximum crops without giving much consideration to the effect on their soils. Established rotations were broken up and the very best parts of the farm put into the most needed crops, while the poorer parts were neglected.

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Now is the time to get back to normal again and to return to the fertilizer formulas that were so profitable and satisfactory in the past. But this cannot be done without effort on the part of the farmer and without sufficient notice to the manufacturer to prepare for the change.

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Potash Pays

notify your dealer that you wish to use fertilizers with 5 to 10 per cent. of Potash and a little more to make up for the drain on the soil during the Potash famine.

And do it right away, for it takes time for the manufacturer to import it and it is only fair that he should know what your demands will be.

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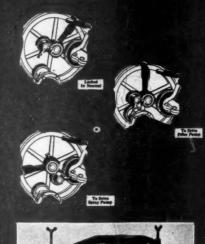
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